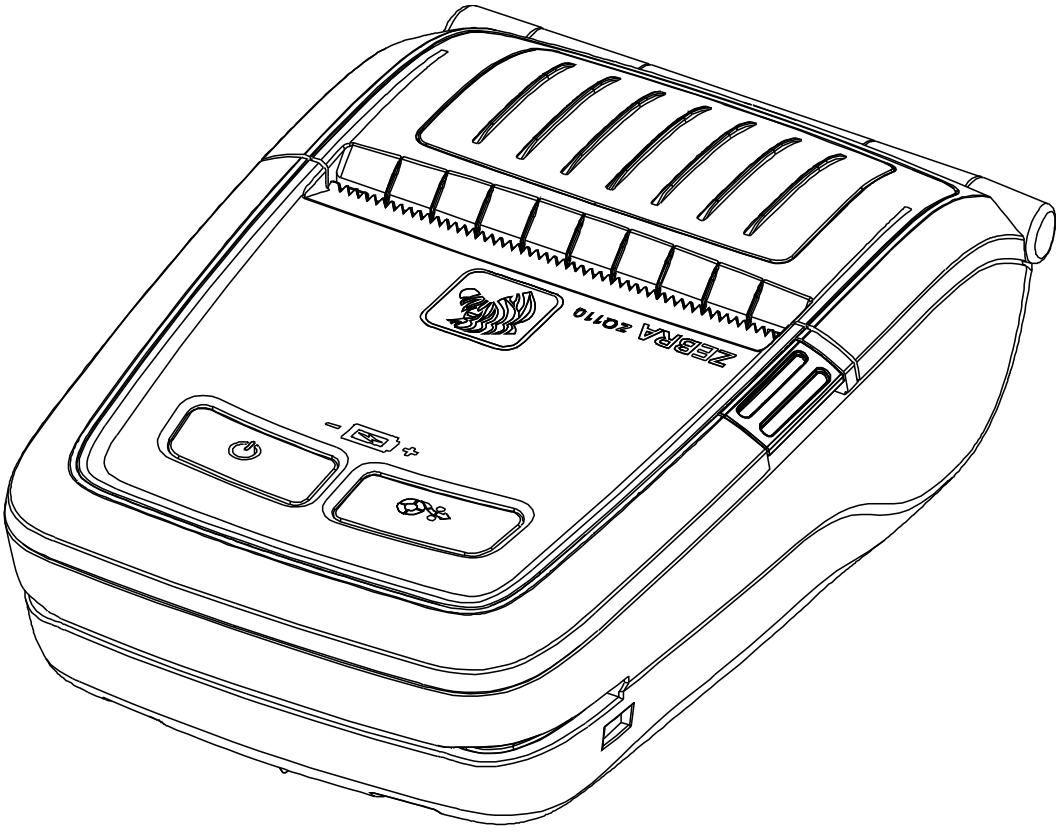
ZQ110

Mobile Printer Command Manual



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Rev. A

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NOTE: This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and the receiver.
• Connect the equipment to an outlet or circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

WARNING: Exposure to Radio Frequency radiation. To conform to FCC RF exposure requirements this device shall be used in accordance with the operating conditions and instructions listed in this manual.

NOTE: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance.

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1. Notice

This manual contains information on the protocol and functions of all control commands that can be used with the ZQ110 printer.

2. Control Commands List

No	Command	Name
1	EOT	Transmit status
2	HT	Horizontal tab
3	LF	Print and line feed
4	FF	Form feed (in page mode)
5	CR	Print and carriage return
6	DLE	Set real-time command mode
7	CAN	Cancel the print data in page mode
8	ESC SP	Set the character right space
9	ESC !	Set print mode
10	ESC $	Set absolute print position
11	ESC *	Specify bit image mode
12	ESC -	Turn underline mode on/off
13	ESC 2	Select default line spacing
14	ESC 3	Set line spacing
15	ESC =	Select peripheral device
16	ESC @	Initialize printer
17	ESC D	Set horizontal tab positions
18	ESC E	Turn emphasized mode on/off
19	ESC G	Turn double-strike mode on/off
20	ESC J	Print and feed paper
21	ESC L	Select page mode
22	ESC M	Select character font/ MSR card read
23	ESC R	Specify an international character set
24	ESC S	Select standard mode
25	ESC T	Select print direction in page mode
26	ESC W	Set print area in page mode
27	ESC \	Set relative print position
28	ESC a	Set position alignment
29	ESC d	Print and feed n lines
30	ESC t	Select character code table

No	Command	Name
31	ESC {	Turn upside-down print mode on/off
32	FS &	Select Kanji character mode
33	FS .	Cancel Kanji character mode
34	GS !	Select character size
35	GS $	Set absolute vertical print position in page mode
36	GS (A	Execute test print
37	GS (F	Set black mark control functions
38	GS (k	Specify and print the symbol
39	GS (E	Set NV user memory area
40	GS (L GS 8 L	Select graphics data
41	GS :	Start/end macro definition
42	GS B	Turn white/black reverse print mode on/off
43	GS H	Select print position of HRI characters
44	GS I	Transmit printer ID
45	GS I b	Transmit battery status
46	GS L	Set left margin
47	GS T	Set print position to the beginning of print line
48	GS W	Set print area width
49	GS \	Set relative vertical print position in page mode
50	GS ^	Execute macro
51	GS a	Enable/disable Automatic Status Back (ASB)
52	GS f	Select font for HRI characters
53	GS h	Set bar code height
54	GS k	Print bar code
55	GS r	Transmit status
56	GS v 0	Print raster bit image
57	GS w	Set bar code width
58	BS L A	Execute automatic calibration in Black mark mode
59	BS L L	Select Black mark mode
60	BS L R	Select Receipt mode
61	BS M	Select device font type
62	BS M S	Sentinel character set up commands
63	US US i	Get B/T configuration
64	US US p	Set B/T configuration
65	WLAN	WLAN configuration

3. Control Commands Details

3-1 Command Notation

[Name] The name of the command.

[Format] The code sequence: ASCII indicates the ASCII character equivalents.
Hex indicates the hexadecimal equivalents.
Decimal indicates the decimal equivalents.

[Range] [ ] k indicates that the content of the [ ] should be repeated k times.
Provides the allowable ranges for the arguments.

[Description] Describes the function of the command.

3-2 Explanation of Terms

LSB Least Significant Bit

3-3 Control Commands Details

EOT n

[Name] Transmit status

[Format]

ASCII	EOT	n
Hex	04	n
Decimal	4	n

[Range] $1 \le n \le 4$

[Description] ▪ Transmits the status specified by n as follows:

n	Function
1	Transmit printer status
2	Transmit off-line status
3	Transmit error status
4	Transmit paper roll sensor status

▪ This printer transmits the following status.

n=1: Printer status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Fixed
1	On	02	2	Fixed
2	Off	00	0	Fixed
3	Off	00	0	On-Line
	On	08	8	Off-Line
4	On	10	16	Fixed
5	Off	00	0	Fixed
6	Off	00	0	Fixed
7	Off	00	0	Fixed

n=2: Off-line status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Fixed
1	On	02	2	Fixed
2	Off	00	0	Cover is closed
	On	04	4	Cover is open
3	Off	00	0	Paper is not being fed by using the paper FEED button
	On	08	8	Paper is being fed by the paper FEED button
4	On	10	16	Fixed
5	Off	00	0	No paper-end stop
	On	20	32	Printing is being stopped
6	Off	00	0	Fixed
7	Off	00	0	Fixed

n=3: Error status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Fixed
1	On	02	2	Fixed
2	Off	00	0	Fixed
3	Off	00	0	Fixed
4	On	10	16	Fixed
5	Off	00	0	Fixed
6	Off	00	0	Fixed
7	Off	00	0	Fixed

n=4: Continuous paper sensor status

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Fixed
1	On	02	2	Fixed
2	Off	00	0	Fixed
3	Off	00	0	Fixed
4	On	10	16	Fixed
5	Off	00	0	Paper end sensor; paper present
	On	20	32	Paper end sensor; paper not present
6	Off	00	0	Paper end sensor; paper present
	On	40	64	Paper end sensor; paper not present
7	Off	00	0	Fixed

[Notes]

- This is a status request command to determine if the printer is off-line or if an error condition has occurred. Take the following into consideration:
- If this command interrupts the code string of another command, this command is processed as a parameter of the other command; therefore, the print result will not be correct.
- If a command such as graphics data or defined data has a code string that is the same as a code string in a parameter, the printer processes and then continues with the bit-image or other command.
- This command following DLE can be executed in real-time command mode.
- This command is ignored when transmitting block data (Header ~ NUL).

HT

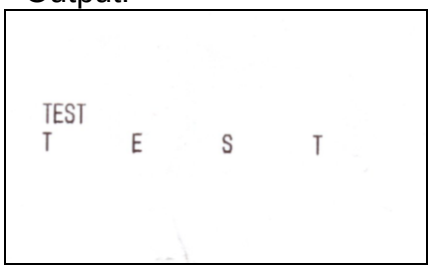
[Name] Horizontal tab.

[Format]

ASCII	HT
Hex	09
Decimal	9

[Description]
- Moves the print position to the next horizontal tab position.

[Example]
- Input:
  0x54 0x45 0x53 0x54 0x0a
  0x54 0x09 0x45 0x09 0x53 0x09 0x54 0x0a
- Output:



LF

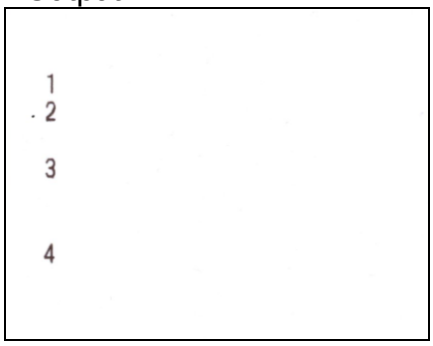
[Name] Print and line feed.

[Format]

ASCII	LF
Hex	0A
Decimal	10

[Description]
- In standard mode, prints the data in the print buffer and feeds one line based on the current line spacing.
- In page mode, only the print position moves, and the printer does not perform actual printing

[Example]
- Input:
  0x31
  0x0a
  0x32
  0x0a 0x0a
  0x33
  0x0a 0x0a 0x0a
  0x34 0x0a
- Output:



FF

[Name] If in page mode, after printing, the printer is returned to standard mode.

[Format]

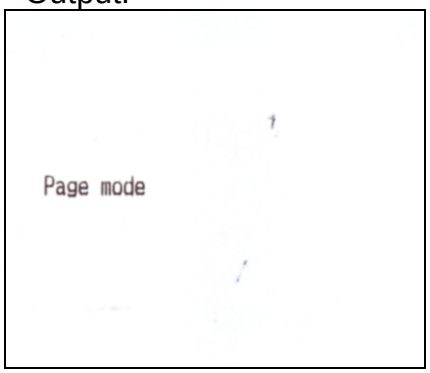
ASCII	FF
Hex	0C
Decimal	12

[Description]
- All data collected to the current point is printed, and then the printer is converted from page mode to standard mode.
- After printing, the printer does not clear the buffer data of page mode.

[Example]
- Input:

0x1b 0x4c
0x1b 0x57 0x00 0x00 0x00 0x00 0x80 0x01 0xf0 0x00
0x50 0x61 0x67 0x65 0x20 0x6d 0x6f 0x64 0x65 0x0a
0x0c

- Output:



CR

[Name] Print and carriage return.

[Format]

ASCII	CR
Hex	0D
Decimal	13

[Description]
- This command is ignored CR.

DLE

[Name] Set real-time command mode.

[Format]

ASCII	DLE
Hex	10
Decimal	16

[Description]

- Set real-time command mode.
- A single command following this command is regarded as a real time command that the printer executes upon receiving it.
- The real time command mode using DLE is activated for following commands.

Command	Function
EOT	Transmit printer status
GS r	Transmit status
GS I	Transmit printer ID

CAN

[Name] Cancel print data in page mode.

[Format]

ASCII	CAN
Hex	18
Decimal	24

[Description]

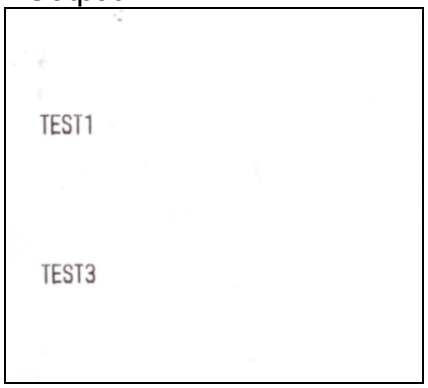
- In page mode, deletes all the print data in the current print area.

[Example]

- Input:

```
0x54 0x45 0x53 0x54 0x31 0x0a
0x1b 0x4c
0x1b 0x57 0x00 0x00 0x00 0x00 0x80 0x01 0xf0 0x00
0x54 0x45 0x53 0x54 0x32 0x0a
0x18
0x0c
0x54 0x45 0x53 0x54 0x33 0x0a
```

- Output:



ESC SP

[Name] Set right-side character spacing.

[Format]

ASCII	ESC	SP	n
Hex	1B	20	n
Decimal	27	32	n

[Range] 0 ≤ n ≤ 255

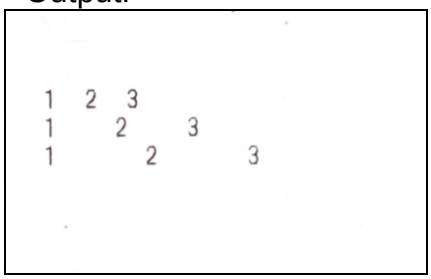
[Default] n=0

[Description]
- Sets the character spacing for the right side of the character to [n ×horizontal or vertical motion units].
- The maximum right-side character spacing is:
  - 31.875mm.

[Example]
- Input:

```
0x1b 0x20 0x20
0x31 0x32 0x33 0x0a
0x1b 0x20 0x40
0x31 0x32 0x33 0x0a
0x1b 0x20 0x60
0x31 0x32 0x33 0x0a
```

- Output:



ESC !

[Name] Select print mode(s).

[Format]

ASCII	ESC	!	n
Hex	1B	21	n
Decimal	27	33	n

[Range] 0 ≤ n ≤ 255

[Default] n=0

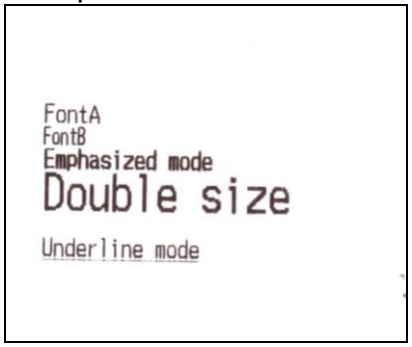
[Description] ▪ Selects print mode(s) using n as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Character font A (12 × 24) selected.
	On	01	1	Character font B (9 x 17) selected.
1,2	Off	00	0	Reserved.
3	Off	00	0	Emphasized mode not selected.
	On	08	8	Emphasized mode selected.
4	Off	00	0	Double-height mode not selected.
	On	10	16	Double-height mode selected.
5	Off	00	0	Double-width mode not selected.
	On	20	32	Double-width mode selected.
6	Off	00	0	Reserved.
7	Off	00	0	Underline mode not selected.
	On	80	128	Underline mode selected.

[Example] ▪ Input:

```
0x1b 0x21 0x00
0x46 0x6f 0x6e 0x74 0x41 0x0a
0x1b 0x21 0x01
0x46 0x6f 0x6e 0x74 0x42 0x0a
0x1b 0x21 0x08
0x45 0x6d 0x70 0x68 0x61 0x73 0x69 0x7a 0x65 0x64 0x20 0x6d 0x6f
0x64 0x65 0x0a
0x1b 0x21 0x30
0x44 0x6f 0x75 0x62 0x6c 0x65 0x20 0x73 0x69 0x7a 0x65 0x0a
0x1b 0x21 0x80
0x55 0x6e 0x64 0x65 0x72 0x6c 0x69 0x6e 0x65 0x20 0x6d 0x6f 0x64
0x65 0x0a
```

▪ Output:



ESC $

[Name] Set absolute print position.

[Format]

ASCII	ESC	$	nL	nH
Hex	1B	24	nL	nH
Decimal	27	36	nL	nH

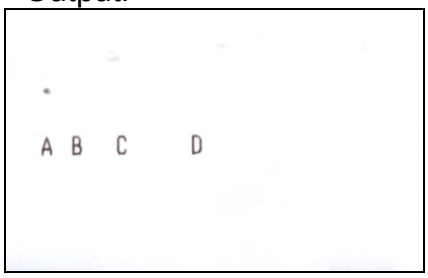
[Range] 0 ≤ (nL + nH x 256) ≤ 65535 (0 ≤ nH ≤ 255, 0 ≤ nL ≤ 255)

[Description]
- Sets the next print starting position, and the absolute print position, in reference to the left margin. The distance from the beginning of the line to the left margin is [(nL + nH x 256) x (vertical or horizontal motion units)].

[Example]
- Input:

```
0x41
0x1b 0x24 0x20 0x00
0x42
0x1b 0x24 0x50 0x00
0x43
0x1b 0x24 0xa0 0x00
0x44
0x0a
```

- Output:



ESC *

[Name] Select bit image mode.

[Format]

ASCII	ESC	*	m	nL	nH	d1...dk
Hex	1B	2A	m	nL	nH	d1...dk
Decimal	27	42	m	nL	nH	d1...dk

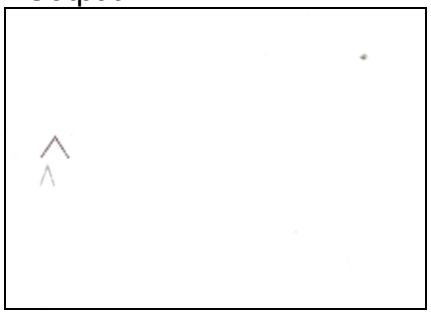
[Range]
m=0, 1, 32, 33
1 ≤ (nL + nH x 256) ≤ 1023 (0 ≤ nL ≤ 255, 0 ≤ nH ≤ 3)
0 ≤ d ≤ 255

[Description]
▪ Specifies the bit image in m mode for the number of dots specified by nL and nH.

* dpi : dots per 25.4mm {1”}

m	Mode	Number of dots in vertical direction	Vertical dot density	Horizontal dot density	Number of bytes (k)
0	8-dot single-density	8	203/3 dpi	203/2 dpi	nL + nH x 256
1	8-dot double-density	8	203/3 dpi	203 dpi	nL + nH x 256
32	24-dot single-density	24	203 dpi	203/2 dpi	(nL + nH x 256) x 3
33	24-dot double-density	24	203 dpi	203 dpi	(nL + nH x 256) x 3

[Example]
▪ Input:
0x1b 0x2a 0x00 0x0f 0x00 0x01 0x02 0x04 0x08 0x10 0x20 0x40 0x80 0x40 0x20 0x10 0x08 0x04 0x02 0x01
0x0a
0x1b 0x2a 0x01 0x0f 0x00 0x01 0x02 0x04 0x08 0x10 0x20 0x40 0x80 0x40 0x20 0x10 0x08 0x04 0x02 0x01
0x0a
▪ Output:



ESC –

[Name] Turn underline mode on/off.

[Format]

ASCII	ESC	-	n
Hex	1B	2D	n
Decimal	27	45	n

[Range] 0 ≤ n ≤ 2, 48 ≤ n ≤ 50

[Default] n=0

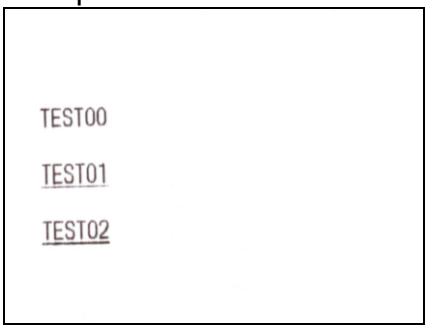
[Description] ▪ Turn underline mode on or off, based on the following values of n:

n	Function
0,48	Turns off underline mode.
1,49	Turns on underline mode, set at 1-dot width.
2,50	Turns on underline mode, set at 2-dot width.

[Example] ▪ Input:

```
0x1b 0x2d 0x00
0x54 0x45 0x53 0x54 0x30 0x30
0x0a 0x0a
0x1b 0x2d 0x01
0x54 0x45 0x53 0x54 0x30 0x31
0x0a 0x0a
0x1b 0x2d 0x02
0x54 0x45 0x53 0x54 0x30 0x32
0x0a
```

▪ Output:



ESC 2

[Name] Select default line spacing.

[Format]

ASCII	ESC	2
Hex	1B	32
Decimal	27	50

[Description]
- The default line spacing is approximately 3.75 mm, which is equivalent to 30 dots.

ESC 3

[Name] Set line spacing

[Format]

ASCII	ESC	3	n
Hex	1B	33	n
Decimal	27	51	n

[Range] 0 ≤ n ≤ 255

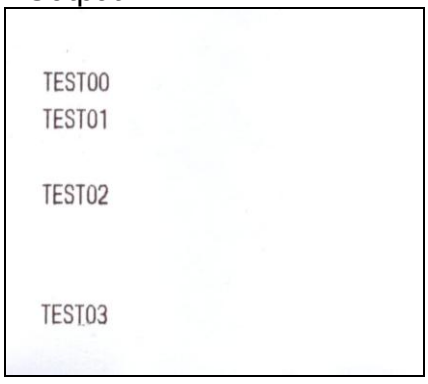
[Default] n = 30

[Description]
- The vertical or horizontal motion unit is approximately 0.125 mm {1/203 inches}. This value equals one dot pitch.
- Sets the current line spacing to [n x vertical motion units] inches.
- The maximum settable line spacing is 31.875mm.

[Example]
- Input:

```
0x54 0x45 0x53 0x54 0x30 0x30
0x1b 0x33 0x50
0x0a
0x54 0x45 0x53 0x54 0x30 0x31
0x1b 0x33 0xa0
0x0a
0x54 0x45 0x53 0x54 0x30 0x32
0x1b 0x33 0xff
0x0a
0x54 0x45 0x53 0x54 0x30 0x33
0x0a
```

- Output:



ESC =

[Name] Select peripheral device

[Format]

ASCII	ESC	=	n
Hex	1B	3D	n
Decimal	27	61	n

[Range] $1 \le n \le 3$

[Default] n = 1

[Description]
- The selection of peripherals according to the n value is as follows.

n	Function
1,3	Printer Activation
2	Printer Deactivation

ESC @

[Name] Initialize printer.

[Format]

ASCII	ESC	@
Hex	1B	40
Decimal	27	64

[Range] $32 \le n \le 126$

[Description]
- Clears the data in the print buffer and resets the printer mode to the mode that was in effect when the power was turned on.

ESC D

[Name] Set horizontal tab positions.

[Format]

ASCII	ESC	D	n1...nk	NUL
H x	1B	44	n1...nk	00
Decimal	27	68	n1...nk	0

[Range] $1 \le n \le 255$, $0 \le k \le 32$

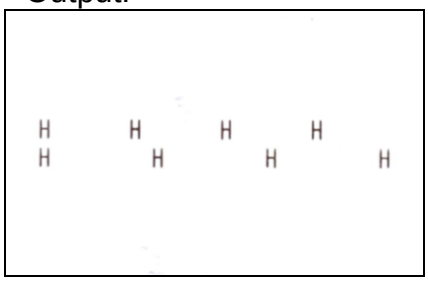
[Default] n=8, 16, 24, 32, 40,....., 232, 240, 248
(for font A in a standard character size width)

[Description]
- Sets horizontal tab positions.
  - n specifies the number of digits from the setting position to the left margin or the beginning of the line.
  - k specifies the number of bytes set for the horizontal tab position.
- The horizontal tab position is stored as a value of [character width x n] measured form the beginning of the line.

[Example] ▪ Input:

```
0x48 0x09 0x48 0x09 0x48 0x09 0x48
0x0a
0x1b 0x44 0x0a 0x14 0x1e 0x00
0x48 0x09 0x48 0x09 0x48 0x09 0x48
0x0a
```

▪ Output:



ESC E

[Name] Turn emphasized mode on / off.

[Format]

ASCII	ESC	E	n
Hex	1B	45	n
Decimal	27	69	n

[Range] 0 ≤ n ≤ 255

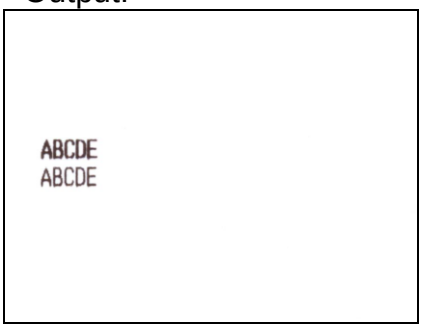
[Default] n=0

[Description] ▪ Turns emphasized mode on or off.
- When the LSB of n is 0, emphasized mode is turned off.
- When the LSB of n is 1, emphasized mode is turned on.

[Example] ▪ Input:

```
0x1b 0x45 0x01
0x41 0x42 0x43 0x44 0x45
0x0a
0x1b 0x45 0x00
0x41 0x42 0x43 0x44 0x45
0x0a
```

▪ Output:



ESC G

[Name] Turn double-strike mode on/off.

[Format]

ASCII	ESC	G	n
Hex	1B	47	n
Decimal	27	71	n

[Range] 0 ≤ n ≤ 255

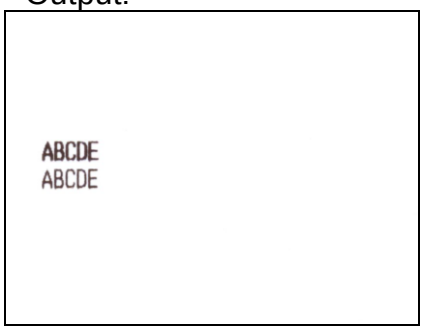
[Default] n=0

[Description]
- Turns double-strike mode on or off.
  - When the LSB of n is 0, double-strike mode is turned off.
  - When the LSB of n is 1, double-strike mode is turned on.

[Example]
- Input:

```
0x1b 0x47 0x01
0x41 0x42 0x43 0x44 0x45
0x0a
0x1b 0x47 0x00
0x41 0x42 0x43 0x44 0x45
0x0a
```

- Output:



ESC J

[Name] Print and feed paper.

[Format]

ASCII	ESC	J	n
Hex	1B	4A	n
Decimal	27	74	n

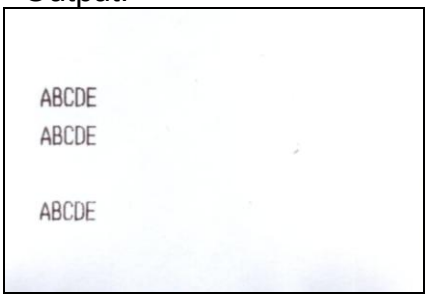
[Range] 0 ≤ n ≤ 255

[Description]
- Prints the data in the print buffer and feeds the paper [n X vertical motion unit].

[Example]
- Input:

```
0x41 0x42 0x43 0x44 0x45
0x1b 0x4a 0x50
0x41 0x42 0x43 0x44 0x45
0x1b 0x4a 0xa0
0x41 0x42 0x43 0x44 0x45
0a
```

- Output:



ESC L

[Name] Select page mode.

[Format]

ASCII	ESC	L
Hex	1B	4C
Decimal	27	76

[Description]
- Switches from standard mode to page mode.

ESC M

[Name] Select character font./ MSR card read

[Format]

ASCII	ESC	M	n
Hex	1B	4D	n
Decimal	27	77	n

[Range] n = 0, 1, 48, 49 , 67, 68, 69, 70, 71, 72, 73

[Default] n=0

[Description]
- Selects only-byte character fonts
- Selects Card reader mode

n	Function
0, 48	Character font A (12 × 24) selected
1, 49	Character font B (9 × 17) selected
2, 50	Character font B (9 × 24) selected
70	Set 1 track card reader mode
71	Set 2 track card reader mode
72	Set 1,2 track card reader mode
73	Transmits the MSR setting value(s)
68	Set 3 track card reader mode
69	Set 2,3 track card reader mode
66	Set 1,2,3 track card reader mode
99	Cancel MSR reader mode

[Notes]
- Magnetic card read out put format

- When MSR set to Track 1 Read mode

START characters (Max 10 byte)	Max DATA 76 characters (1Track data)	END characters (Max 10 byte)	0DH 0AH

- When MSR set to Track 2 Read mode

START characters (Max 10 byte)	Max DATA 37 characters (2Track data)	END characters (Max 10 byte)	0DH 0AH

- When MSR set to Track 3 Read mode

START characters (Max 10 byte)	Max DATA 104 characters (3Track data)	END characters (Max 10 byte)	0DH 0AH

- When MSR set to Track 1/2 Read mode

START characters (Max 10 byte)	Max DATA 76 characters (1Track data)	END characters (Max 10 byte)	0DH 0AH
START characters (Max 10 byte)	Max DATA 37 characters (2Track data)	END characters (Max 10 byte)	0DH 0AH

- When MSR set to Track 2/3 Read mode

START characters (Max 10 byte)	Max DATA 37 characters (2Track data)	END characters (Max 10 byte)	0DH 0AH
START characters (Max 10 byte)	Max DATA 104 characters (3Track data)	END characters (Max 10 byte)	0DH 0AH

- When MSR set to Track 1/2/3 Read mode

START characters (Max 10 byte)	Max DATA 76 characters (1Track data)	END characters (Max 10 byte)	0DH 0AH
START characters (Max 10 byte)	Max DATA 37 characters (2Track data)	END characters (Max 10 byte)	0DH 0AH
START characters (Max 10 byte)	Max DATA 104 characters (3Track data)	END characters (Max 10 byte)	0DH 0AH

▪ Transmits the setting value format

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	80H	128	1 byte
Data	41H ~ 48H	65 ~ 72	1 byte
NUL	00H	0	1 byte
Header	37H	55	1 byte

▪ MSR Setting value

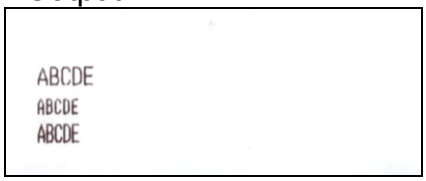
Hex.	Function
41	Track 1/2/3 read mode command (3 Track case)
42	Track 1 read mode AUTO trigger (3 Track case)
43	Track 2 read mode AUTO trigger (3 Track case)
44	Track 3 read mode AUTO trigger (3 Track case)
45	Track 1/2 read mode AUTO trigger (3 Track case)
46	Track 2/3 read mode AUTO trigger (3 Track case)
47	Track 1/2/3 read mode AUTO trigger (3 Track case)
48	MSR not used

[Example]

▪ Input:

```
0x1b 0x4d 0x00
0x41 0x42 0x43 0x44 0x45
0x0a
0x1b 0x4d 0x01
0x41 0x42 0x43 0x44 0x45
0xa0
0x1b 0x4d 0x02
0x41 0x42 0x43 0x44 0x45
0a
```

▪ Output:



ESC R

[Name] Select an international character set.

[Format]

ASCII	ESC	R	n
Hex	1B	52	n
Decimal	27	82	n

[Range] 0 ≤ n ≤ 13

[Default] n=0

[Description] ▪ Selects international character set in from the following table:

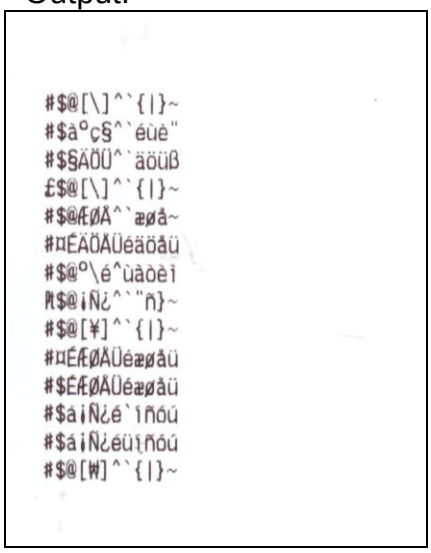
n	Character set	n	Character set
0	U.S.A	7	Spain I
1	France	9	Norway
2	ermany	10	Denmark II
3	U.K	11	Spain II
4	Denmark I	12	Latin America
5	Sweden	13	Korea
6	Italy		

[Example] ▪ Input:

```
0x1b 0x52 0x00
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x01
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x02
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x03
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x04
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x05
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x06
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x07
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x08
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x09
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
```

0x1b 0x52 0x0a
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x0b
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x0c
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a
0x1b 0x52 0x0d
0x23 0x24 0x40 0x5b 0x5c 0x5d 0x5e 0x60 0x7b 0x7c 0x7d 0x7e
0x0a

▪ Output:



ESC S	

[Name] Select standard mode.

[Format]

ASCII	ESC	S
Hex	1B	53
Decimal	27	83

[Description] ▪ Switches from page mode to standard mode.

ESC T

[Name] Select print direction in page mode.

[Format]

ASCII	ESC	T	n
Hex	1B	54	n
Decimal	27	84	n

[Range] 0 ≤ n ≤ 3, 48 ≤ n ≤ 51

[Default] n=o

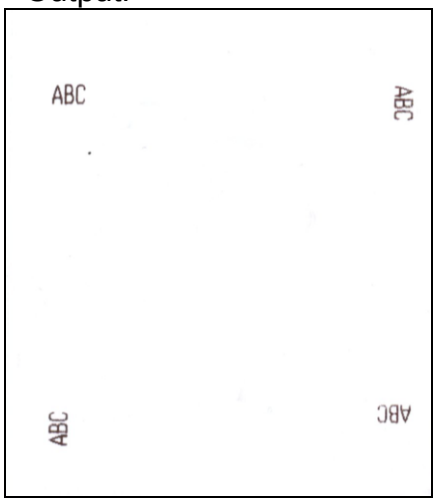
[Description] ▪ Selects the print direction and starting position in page mode.

n	Print Direction	Starting Position
0,48	Left right	Upper left
1,49	Bottom to top	Lower left
2,50	Right left	Lower right
3,51	Top bottom	Upper right

[Example] ▪ Input:

```
0x1b 0x4c
0x1b 0x57 0x00 0x00 0x00 0x00 0x80 0x01 0x80 0x01
0x1b 0x54 0x00
0x41 0x42 0x43
0x1b 0x54 0x01
0x41 0x42 0x43
0x1b 0x54 0x02
0x41 0x42 0x43
0x1b 0x54 0x03
0x41 0x42 0x43
0x0c
```

▪ Output:



ESC W

[Name] Set relative print position.

[Format]

ASCII	ESC	W	xL	xH	yL	yH	dxL	dxH	dyL	dyH
Hex	1B	57	xL	xH	yL	yH	dxL	dxH	dyL	dyH
Decimal	27	87	xL	xH	yL	yH	dxL	dxH	dyL	dyH

[Range]

0 ≤ (xL + xH x 256) ≤ 65535 (0 ≤ xL ≤ 255, 0 ≤ xH ≤ 255)
0 ≤ (yL + yH x 256) ≤ 65535 (0 ≤ yL ≤ 255, 0 ≤ yH ≤ 255)
1 ≤ (dxL + dxH x 256) ≤ 65535 (0 ≤ dxL ≤ 255, 0 ≤ dxH ≤ 255)
1 ≤ (dyL + dyH x 256) ≤ 65535 (0 ≤ dyL ≤ 255, 0 ≤ dyH ≤ 255)

[Default]

Horizontal logical origin and vertical logical origin = 0
xL=0, xH =0, yL=0, yH=0
dxL = 128, dxH = 1, dyL = 72, dyH = 3

[Description]

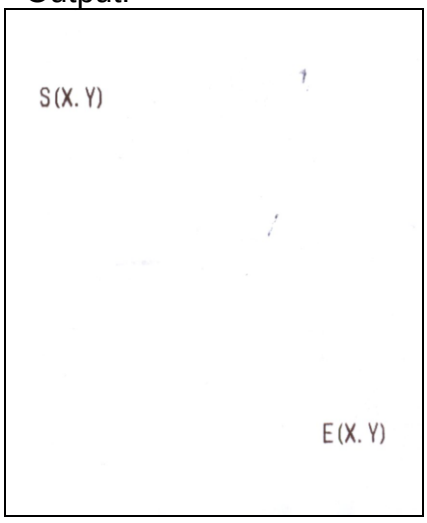
▪ When paper width of 58mm is selected:
(xL + xH x 256) = 0 (xL=0, xH=0)
(dyL + dyH x 256) = 840 (dyL=72, dyH=3)
▪ Set the position and the size of the printing area.
- Horizontal starting position = [(xL + xH x 256) x (horizontal motion units)].
- Vertical starting position = [(yL + yH x 256) x (vertical motion units)].
- Horizontal printing area width = [(dxL + dxH x 256) x (horizontal motion units)].
- Vertical printing area width = [(dyL + dyH x 256) x (vertical motion units)].
▪ The printer ignores any setting that exceeds the print area.

[Example]

▪ Input:

```
0x1b 0x4c
0x1b 0x57 0x00 0x00 0x00 0x00 0x80 0x01 0x80 0x01
0x53 0x28 0x58 0x2e 0x59 0x29
0x1b 0x24 0x2c 0x01
0x1d 0x24 0x80 0x01
0x45 0x28 0x58 0x2e 0x59 0x29
0x0c
```

▪ Output:



ESC \

[Name] Set relative print position.

[Format]

ASCII	ESC	\	n	nH
Hex	1B	5C	nL	nH
Decimal	27	92	nL	nH

[Range] 0 ≤ (nL + nH x 256) ≤ 65535 (0 ≤ nL 255, 0 ≤ nH ≤ 255)

[Description]

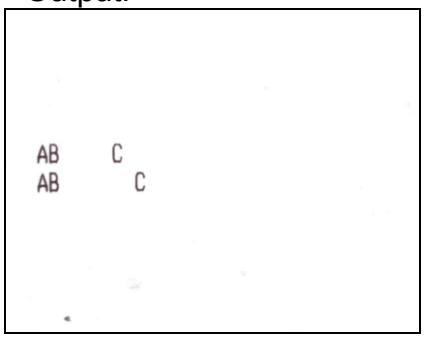
- Set the print starting position based on the current position to [(nL + nH × 256) × horizontal or vertical motion unit]
  - When (nL + nH × 256 is a positive number, the print starting position is specified to the right based on the current position.
  - When (nL + nH × 256) is a negative number, the print starting position is specified to the left based on the current position.
- The printer ignores any setting that exceeds the print area.

[Example]

- Input:

```
0x41 0x42
0x1b 0x24 0x50 0x00
0x43
0x0a
0x41 0x42
0x1b 0x5c 0x50 0x00
0x43
0x0a
```

- Output:



ESC a

[Name] Select justification.

[Format]

ASC I	ESC	a	n
Hex	1B	61	n
Decimal	27	97	n

[Range] 0 ≤ n ≤2, 48 ≤ n ≤50

[Default] n=0

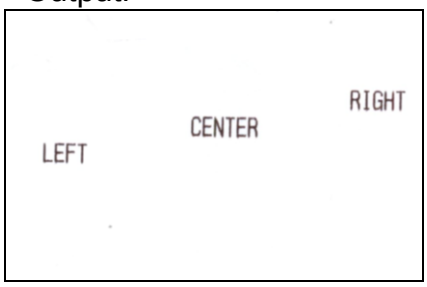
[Description] ▪ In standard mode, aligns all the data in one line to the position specified by n as follows:

n	Justification
0, 48	Left justification
1, 49	Centering
2, 50	Right justification

[Example] ▪ Input:

```
0x1b 0x61 0x02
0x52 0x49 0x47 0x48 0x54
0x0a
0x1b 0x61 0x01
0x43 0x45 0x4e 0x54 0x45 0x52
0x0a
0x1b 0x61 0x00
0x4c 0x45 0x46 0x54
0x0a
```

▪ Output:



ESC d

[Name] Print and feed n lines.

[Format]

ASCII	ESC	d	n
Hex	1B	64	n
Decimal	27	100	n

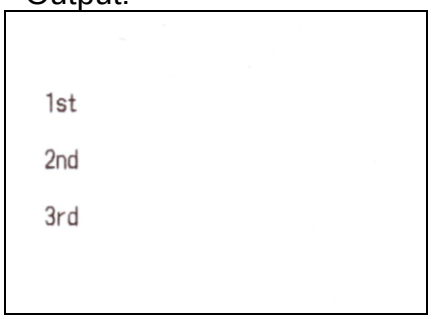
[Range] 0 ≤ n ≤ 255

[Description] ▪ Prints the data in the print buffer and feeds n lines.

[Example] ▪ Input:

```
0x31 0x73 0x74
0x0a
0x0a
0x32 0x6e 0x64
0x1b 0x64 0x02
0x33 0x72 0x64
0x0a
```

▪ Output:



ESC t

[Name] Select character code table.

[Format]

ASCII	ESC	t	n
Hex	1B	74	n
Decimal	27	116	n

[Range] 0 ≤ n ≤ 5, 16 ≤ n ≤ 19, 21 ≤ n ≤ 31, 33 ≤ n ≤ 41, n=255

[Default] For model not supporting Thai character: n=0
For model supporting Thai character support : n = 20

[Description] ▪ This command specifies code page according to the value of n as follows:

n	Code page
0	Page 0 37 (USA, Standard Europe)
1	Page 1 Katakana
2	Page 2 850 (Multilingual)
3	Page 3 860 (Portuguese)
4	Page 4 863 (Cana ian-French)
5	Page 5 865 (Nordic)
16	Page 16 1252 (Latin I)
17	Page 17 866 (Cyrillic #2)
18	Page 18 852 (Latin 2)
19	Page 19 858 (Euro)
21	Page 21 862 (Hebrew DOS code)
22	Page 22 864 (Arabic)
23	Page 23 Thai42
24	Page 24 1253 (Greek)
25	Page 25 1254 (Turkish)
26	Page 26 1257 (Baltic)
27	Page 27 Farsi
28	Page 28 1251 (Cyrillic)
29	Page 29 737 (Greek)
30	Page 30 775 (Baltic)
31	Page 31 Thai14
33	Page 33 1255 (Hebrew New code)
34	Page 34 Thai 11
35	Page 35 Thai 18
36	Page 36 855 (Cyrillic)
37	Page 37 857 (Turkish)
38	Page 38 928 (Greek)
39	Page 39 Thai 16
40	Page 40 1256 (Arabic)
41	Page 41 1258 (Vietnam)
42	Page 42 KHMER(Cambodia)
47	Page 47 1250 (Czech)
48	Page 48 Latin 9
255	User Code Page (Space)

ESC {

[Name] Turns upside-down printing mode on/off.

[Format]

ASCII	ESC	{	n
Hex	1B	7B	n
Decimal	27	123	n

[Range] 0 ≤ n ≤ 255

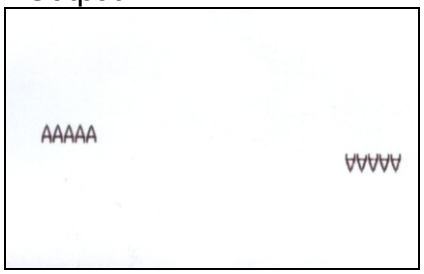
[Default] n=0

[Description]
- Turns upside-down printing mode on or off.
  - When the LSB of n is 0, upside-down printing mode is turned off.
  - When the LSB of n is 1, upside-down printing mode is turned on.
- The upside-down print mode has no effect in page mode. If this command is processed in page mode, upside-down printing mode is enabled when the printer returns to standard mode.
- When upside-down print mode is turned on, the printer prints 180° rotated characters from right to left.

[Example]
- Input:

```
0x41 0x41 0x41 0x41 0x41
0x0a
0x1b 0x7b 0x01
0x41 0x41 0x41 0x41 0x41
0x0a
```

- Output:



FS &

[Name] Select Kanji character mode

[Format]

ASCII	FS	&
Hex	1C	26
Decimal	28	38

[Description]
- This command sets Kanji character mode.

FS .

[Name] Cancel Kanji character mode

[Format]

ASCII	FS	.
Hex	1C	2E
Decima	28	46

[Description]
- This command cancels Kanji character mode.

GS !

[Name] Select character size.

[Format]

ASCII	GS	!	n
Hex	1D	21	n
Decimal	29	33	n

[Range] 0 ≤ n ≤ 255
(where 1 ≤ Enlargement in vertical direction ≤ 8, 1 ≤ Enlargement in horizontal direction ≤ 8)

[Default] n=0

[Description] ▪ Selects character size (enlargement in vertical and horizontal directions).

Bit	Function	Setting
0 1 2 3	Specifies the number of times enlarged in the vertical direction	Refer to Table 2 [Enlarged in vertical dir ction]
4 5 6 7	Specifies the number of times enlarged in the horizontal direction	Refer to Table 1 [Enlarged in horizontal direction]

- Table 1 [Enlarged in horizontal direction]

Hex	Decimal	Enlargement
00	0	1 time (standard)
10	16	2 times
20	32	3 times
30	48	4 times
40	64	5 times
50	80	6 times
60	96	7 times
70	112	8 times

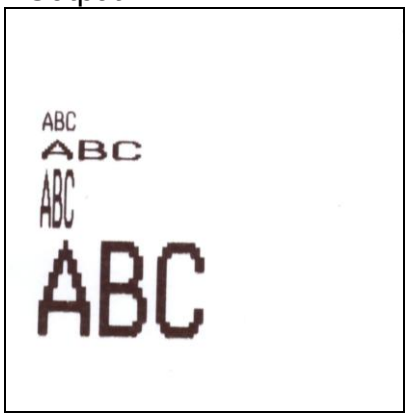
- Table 2 [Enlarged in vertical direction]

Hex	Decimal	Enlargement
00	0	1 time (standard)
01	1	2 times
02	2	3 times
03	3	4 times
04	4	5 times
05	5	6 times
06	6	7 times
07	7	8 times

[Example] ▪ Input:

```
0x41 0x42 0x43
0a
0x1d 0x21 0x20
0x41 0x42 0x43
0a
0x1d 0x21 0x02
0x41 0x42 0x43
0a
0x1d 0x21 0x44
0x41 0x42 0x43
0a
```

▪ Output:



GS $

[Name] Set absolute vertical print position in page mode.

[Format]

ASCII	GS	$	nL	nH
Hex	1D	24	nL	nH
Decimal	29	36	nL	nH

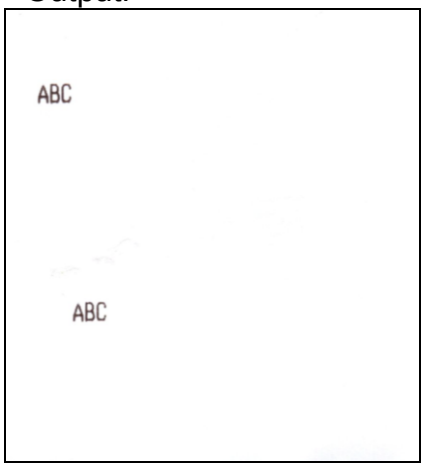
[Range] 0 ≤ (nL + nH x 256) ≤ 65535 (0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255)

[Description] ▪ Sets the absolute vertical print starting position to [(nL + nH × 256) × (vertical or horizontal motion units)].

[Example] ▪ Input:

```
0x1b 0x4c
0x1b 0x57 0x00 0x00 0x00 0x00 0x80 0x01 0x80 0x01
0x41 0x42 0x43
0x1d 0x24 0x00 0x01
0x41 0x42 0x43
0x0c
```

▪ Output:



GS (A

[Name] Execute test print.

[Format]

ASCII	GS	(	A	pL	pH	n	m
He	1D	28	41	pL	pH	n	m
Decimal	29	40	65	pL	pH	n	m

[Range]

(pL + pH x 256) = 2 (pL=2, pH=0)
0 ≤ n ≤ 2, 48 ≤ n ≤ 50
1 ≤ m ≤ 3, 49 ≤ m ≤ 51

[Description]

▪ Executes a test print with a specified test pattern on a specified paper type (roll paper).
- n specifies the paper type as listed below to be tested:

m	Paper type
0, 48 1, 49 2, 50	Paper roll

- m specifies a test pattern as listed below:

m	Test pattern
1, 49	Hexadecimal dump
2, 50	Self Test Printing
3, 51	Self Test rolling pattern

[Notes]

▪ If this command is processed while a macro is being defined, the printer cancels macro definition and starts processing this command. At that time, the macro becomes undefined.
▪ After processing this command, the printer performs a software reset.

GS (F

[Name] Set black mark control functions.

[Description]
- This command performs various functions to control the black mark(BM) paper as follows:

m	Format	Function
2	GS (F pL pH m a nL nH	Sets the paper feed amount to adjust the paper cutting position after sensing BM.
112	GS (F pL pH m aL aH bL bH	Specifies the black mark paper format.

[Notes]
- This command is effective only when the BM(black mark) sensor is enabled.
- This command is stored in the receive buffer and processed in FIFO so that the delay in execution of this command might be occurred.

<Function 2> GS (F pL pH m a nL nH (m=2)

[Format]

ASCII	GS	(	F	pL	pH	m	a	nL	nH
Hex	1D	28	46	04	00	02	a	nL	nH
Decimal	29	40	70	4	0	0	a	nL	nH

[Range]
(pL + pH × 256) = 4 (pL = 4, pH = 0)
m = 2
a = 0, 48
0 ≤ (nL + nH × 256) ≤ 65535 (0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255)

[Default] nL=0, nH=0

[Description]
- This command sets the value for the adjustment of paper cutting position after sensing BM.
  - pL, pH specifies (pL + pH × 256) as the number of bytes after pH (m, a, nL, and nH)
  - nL, nH specifies [(nL + nH × 256) × vertical motion units] as the adjustment value.

[Notes]
- This command affects to the cutting operations as follows:
  - Paper cut by GS V m n.
  - Paper cut after paper feeding triggered by the paper FEED button.
  - Paper cut after initializing the BM.(optional)
  - Paper cut after paper feeding with the cover closed.(optional)
- This command is only effective for the forward paper feeding.
- The maximum adjustable length is 400 mm. If the adjustment value to be specified exceeds the maximum value, the adjustment value is automatically set to the maximum value.

<Function 112> GS (F pL pH m aL aH bL bH (m=112)

[Format]

ASCII	GS	(	F	pL	pH	m	aL	aH	bL	bH
Hex	1D	28	46	05	00	70	aL	aH	bL	bH
Decimal	29	40	70	5	0	223	aL	aH	bL	bH

[Range]

(pL + pH × 256) = 5 (pL = 5, pH = 0)
m = 112
0 ≤ (aL + aH × 256) ≤ 65535 (0 ≤ aL ≤ 255, 0 ≤ aH ≤ 255)
0 ≤ (bL + bH × 256) ≤ 65535 (0 ≤ bL ≤ 255, 0 ≤ bH ≤ 255)

[Default]

aL = 141, aH = 0 (BM height(top of a BM ~ bottom of BM): 20 mm)
bL = 20, bH = 11 (BM interval(top of a BM ~ top of next BM): 400 mm)

[Description]

- This command sets the black mark paper format.
  - pL, pH specifies (pL + pH × 256) as the number of bytes after pH (m, aL, aH,bL, bH).
  - aL, aH specifies [(aL + aH × 256) × vertical motion units] as the BM height.
  - bL, bH specifies as [(bL + bH × 256) × vertical motion units] as the BM interval.

[Notes]

- The available BM height ranges from 4 to 20 mm.
- If the BM height specified is out of range, this command is ignored.
- The BM interval ranges from 40 to 400 mm.
- If the BM interval specified is out of range, this command is ignored.

GS (k pL pH cn fn [parameter]

[Name] Specify and print the symbol.

[Description] ▪ Processes the data concerning two-dimensional code.
- Symbol type is specified by cn.
- Function is specified by fn.

cn	Type of Symbol
48	PDF417
49	QR CODE
51	DATAMATRIX
52	GS 1 DATABAR
53	AZTEC CODE

cn	fn	Function	
48	65	Function 065	PDF417 : Specify the number of columns
	66	Function 066	PDF417 : Specify the number of rows
	67	Function 067	PDF417 : Specify the width of module
	68	Function 068	PDF417 : Specify the module height
	69	Function 069	PDF417 : Specify the error correction level
	70	Function 070	PDF417 : Specify the option
	80	Function 080	PDF417 : Store the received data in the symbol save area
	81	Function 081	PDF417 : Print the symbol data in the symbol save area
49	65	Function 165	QR CODE: module selection
	67	Function 167	QR CODE: module size selection
	69	Function 169	QR CODE: error level setting
	80	Function 180	QR CODE: saving of symbol data in storage area
	81	Function 181	QR CODE: printing of symbol data saved in storage area
51	67	Function 367	DATAMATRIX: module size selection
	80	Function 380	DATAMATRIX: saving of symbol data in storage area
	81	Function 381	DATAMATRIX: printing of symbol data saved in storage area
52	65	Function 465	GS1 DATABAR: Select the type of GS1 barcode to generate.
	66	Function 466	GS1 DATABAR: Select the size of module.
	68	Function 468	GS1 DATABAR: Specify the module height
	70	Function 470	GS1 DATABAR: Specify the height of separator between 2D and 1D barcode symbol.
	80	Function 480	GS1 DATABAR: Store the data in the symbol storage area.
	81	Function 481	GS1 DATABAR: Print the data in the symbol storage area.
53	65	Function 565	AZTEC CODE: module size selection.
	66	Function 566	AZTEC CODE: error level setting
	67	Function 567	AZTEC CODE: mode selection
	80	Function 580	AZTEC CODE: saving of symbol data in storage area.
	81	Function 581	AZTEC CODE: Print the data in the symbol storage area.

<Function 065> GS (k pL pH cn fn n (fn=65)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	30	41	n
Decimal	29	40	107	3	0	48	65	n

[Range]
(pL + pH x 256) = 3 (pL=3, pH=0)
cn=48, fn=65
0 ≤ n ≤ 30

[Default]
n=0

[Description]
Specifies the number of columns of the data area of PDF417.
- n=0 specifies auto processing
- When n is not 0, specifies the number of columns of the data area as n code word.

[Notes]
- Settings of this function affect the processing of Functions 081.
- When auto processing (n=0) is specified, the maximum number of columns in the data area is 30 columns.
- The following data is not included in the number of columns :
  - Start pattern and stop pattern
  - Indicator code word of left and right
- When auto processing (n=0) is specified, the number of columns is calculated by the printing area when processing Functions 081 module width (Function 067), and option setting (Function 070).
- This function is effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 066> GS (k pL pH cn fn n (fn=66)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	30	42	n
Decimal	29	40	107	3	0	48	66	n

[Range]
(pL + pH x 256) = 3 (pL=3, pH=0)
cn=48, fn=66
n=0, 3 ≤ n ≤ 90

[Default]
n=0

[Description]
Specifies the number of rows of data area of PDF417.
- n=0 specifies auto processing
- When n is not 0, specifies the number of rows of the symbol as n rows.

[Notes]
- Settings of this function effect the processing of Functions 081.
- When auto processing (n=0) is specified, the maximum number of rows is 90.
- When auto processing (n=0) is specified, the number of rows is calculated by the printing area when processing Functions 081 module height (Function 068).
- This function is effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 067> GS (k pL pH cn fn n (fn=67)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	30	43	n
Decimal	29	40	107	3	0	48	67	n

[Range]
(pL + pH x 256) = 3 (pL=3, pH=0)
cn=48
fn=67
2 ≤ n ≤ 3

[Default]
n=3

[Description]
Specifies the width of a module of PDF417 symbol.

[Notes]
- Settings of this function affect the processing of Functions 081.
- The setting unit differs, depending on the printer models.
- This function is effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 068> GS (k pL pH cn fn n (fn=68)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	30	44	n
Decimal	29	40	107	3	0	48	68	n

[Range]
(pL + pH x 256) = 3 (pL=3, pH=0)
cn=48
fn=68
2 ≤ n ≤ 4

[Default]
n=3

[Description]
Specifies the module height of PDF417 symbol.
- Specify the height to [a module width x n].

[Notes]
- Settings of this function affect the processing of Functions 081.
- This function is effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 069> GS (k pL pH cn fn m n (fn=69)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m	n
Hex	1D	28	6B	04	00	30	45	m	n
Decimal	29	40	107	4	0	48	69	m	n

[Range]
(pL + pH x 256) = 4 (pL=4, pH=0)
cn=48
fn=69
m=48
48 ≤ n ≤ 8 [m=48]

[Default] n=1

[Description] Specifies the error correction level of PDF417.

m	Function
48	The error correction level is specified by “level”

[Notes]
- Settings of this function affect the processing of Functions 081.
- Error correction level is specified by “level”.
- Error correction level specified by “level” (m=48) is as follows:
  The number of the error correction code word is fixed regardless of the number of code words in the data area.

m	Function	Number of error correction code word
48	Error correction level 0	2
49	Error correction level 1	4
50	Error correction level 2	8
51	Error correction level 3	16
52	Error correction level 4	32
53	Error correction level 5	64
54	Error correction level 6	128
55	Error correction level 7	256
56	Error correction level 8	512

<Function 070> GS (k pL pH cn fn m (fn=70)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	30	46	m
Decimal	29	40	107	3	0	48	70	m

[Range]
(pL + pH x 256) = 3 (pL=3, pH=0)
cn=48
fn=70
m=0,1

[Default] m=0

[Description] Set or cancels the option of PDF417.

m	Function
0	Cancels the processing of simplified PDF417 symbol.
1	Sets the processing of simplified PDF417 symbol.

- m=0 cancels the processing of simplified PDF417 symbol.
- m=1 sets the processing of simplified PDF417 symbol.

[Notes]
- Settings of this function affect the processing of Functions 081.
- When simplified PDF417 symbol is canceled, standard PDF417 symbol is automatically selected.
- This function is effective until ESC @ is executed, the printer is reset, or the power is turned off.

<Function 080> GS (k pL pH cn fn m d1...dk (fn=80)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m	d1...dk
Hex	1D	28	6B	pL	pH	30	50	30	d1...dk
Decimal	29	40	107	pL	pH	48	80	48	d1...dk

[Range]

4 ≤ (pL + pH x 256) ≤ 65535 (0 ≤ pL ≤ 255, 0 ≤ pH ≤ 255)
cn=48
fn=80
m=48
0 ≤ d ≤ 255
k = (pL + pH x 256) - 3

[Description]

Stores the PDF417 symbol data (d1...dk) in the symbol save area.

[Notes]

- Data stored in the symbol save area by this function are processed by Function 081. The data in the symbol save area are reserved after processing Function 081.
- k bytes of d1...dk are processed as symbol data.
- Specify only the data code word of the symbol with this function. Do not include the following data in the data d1..dk as this information is automatically added by the printer:
  - Start pattern and stop pattern.
  - Indicator code word of left and right.
  - The descriptor of symbol length. (the first code word in the data area)
  - The error correction code word calculated by modulus 929.
- This function is effective until the following processing is performed:
  - Function 080 or 180 is executed.
  - ESC @ is executed.
  - The printer is reset or the power is turned off.

<Function 081> GS (k pL pH cn fn m (fn=81)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	30	51	m
Decimal	29	40	107	3	0	48	81	m

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
cn=48
fn=81
m=48

[Description]

Encodes and prints the PDF417 symbol data in the symbol save area.

[Notes]

- In standard mode, use this function when printer is “at the beginning of a line,” or “there is no data in the printer buffer.”
- A symbol with a size that exceeds the printing area can not be printed.
- If there is any error described below in the data of the symbol save area, it cannot be printed.
  - There is no data (Function 080 is not processed).
  - If [(number of columns x number of rows) < number of code word] when auto processing is specified for number of columns and number of rows.
  - Number of code word exceeds 928 in the data area.

- The following data is added automatically by the encode processing:
  - Start pattern and stop pattern.
  - Indicator code word of left and right.
  - The descriptor of symbol length. (the first code word in the data area)
  - The error correction code word calculated by modulus 929.
  - Pad codeword.
- The data area includes the following code words:
  - Data specified by Function 080.
  - The descriptor of symbol length. (the first code word in the data area)
  - The error correction code word calculated by modulus 929.
  - Pad codeword.
- When auto processing (Function 065) is specified, the number of columns is calculated by the current printing area, module width (Function 067), option setting (Function 070), and the code word in the data area. The maximum number of columns is 30.
- When auto processing (Function 066) is specified in page mode, the number of rows is calculated by the current printing area, module height (Function 068), and the code word in the data area. The maximum number of rows is 90.
- Printing of symbol is not affected by print mode (emphasized, double-strike, underline, white/black reverse printing, or 90° clockwise-rotated), except for character size and upside-down printing mode.
- In standard mode, this command executes paper feeding for the amount needed for printing the symbol, regardless of the paper feed amount set by the paper feed setting command. The printing position returns to the left side of the printable area after printing the symbol, and printer is in the status “beginning of the line,” or “ there is no data in the print buffer.”
- In page mode, the printer stores the symbol data in the print buffer without executing actual printing. The printer moves printing position to the next dot of the last data of the symbol.
- The quiet zone is not included in the printing data. Be sure to include the quiet zone when using this function.

[Example]

- Input

```
0x1d 0x28 0x6b 0x03 0x00 0x30 0x41 0x00
0x1d 0x28 0x6b 0x03 0x00 0x30 0x42 0x00
0x1d 0x28 0x6b 0x03 0x00 0x30 0x43 0x03
0x1d 0x28 0x6b 0x03 0x00 0x30 0x44 0x03
0x1d 0x28 0x6b 0x04 0x00 0x30 0x45 0x30 0x32
0x1d 0x28 0x6b 0x03 0x00 0x30 0x46 0x00
0x1d 0x28 0x6b 0x1b 0x00 0x30 0x50 0x30
0x5a 0x51 0x31 0x31 0x30 0x5f 0x5a 0x65 0x62 0x72
0x61 0x20 0x54 0x65 0x63 0x68 0x6e 0x6f 0x6c 0x6f
0x67 0x69 0x65 0x73
0x1d 0x28 0x6b 0x03 0x00 0x30 0x51 0x30
0x0a
```

▪ Output

<Function 165> GS (k pL pH cn fn n1 n2 (fn=65)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n1	n2
Hex	1D	28	6B	04	00	31	41	n1	0
Decimal	29	40	107	3	0	49	65	n1	0

[Range]
(pL + pH x 256) = 3 (pL=3, pH=0)
cn=49
fn =65
n1 = 49, 50
n2 = 0

[Defaults]
n1 = 50, n2 = 0

[Description]
Sets the QR code model

n1	Function
49	Model 1
50	Model 2

[Notes]
▪ The setting of this function impacts <Function 181>.
▪ This function is effective until ESC @ is executed or the printer power is turned off.

<Function 167> GS (k pL pH cn n (fn=67)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	31	43	n
Decimal	29	40	107	3	0	49	67	n

[Range]
(pL + pH x 256) = 3 (pL=3, pH=0)
cn=49
fn=67
0<n<9

[Default]
n=3

[Description]
Sets the size of the QR code module
▪ It impacts the execution of <Function 181>.
▪ This function is effective until ESC @ is executed or the printer power is turned off.
▪ n becomes the value for the module width and height.
(The QR CODE module is square-shaped.)

<Function 169> GS (k pL pH cn fn n (fn=69)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	31	45	n
Decimal	29	40	107	3	0	49	69	n

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
cn=49
fn=69
48≤n≤51

[Default]

n=48

[Description]

Sets the error correction level of the QR code

n	Function	Recovery Amount (%)
48	Error Correction Level L	7
49	Error Correction Level M	15
50	Error Correction Level Q	25
51	Error Correction Level H	30

- The setting of this function impacts the execution of <Function 181>.
- This function is effective until ESC @ is executed or the printer power is turned off.
- For correction with regard to the continuous error correction of the QR code, the Reed-Solomon correction method is used.

<Function 180> GS (k pL pH cn fn m d1...dk (fn=80)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m	d1...dk
Hex	1D	28	6B	pL	pH	31	50	30	d1...dk
Decimal	29	40	107	pL	pH	49	80	48	d1...dk

[Range]

4 ≤ (pL + pH x 256) ≤7092 (0 ≤ pL ≤ 255, 0 ≤ pH ≤ 27)
cn=49
fn=80
m=48
0 ≤ d ≤ 255
k = (pL + pH x 256) - 3

[Description]

Saves symbol data of the QR CODE to the symbol storage area

[Notes]

- Execution of this command saves data to the data storage area and executes Functions 181. Following execution of Functions 181 ,the data remains saved in the symbol storage area.
- k byte represents the symbol data of d1...dk.

Character Type	Usable Characters
Numeric Data	“0” ~ “9”
Alphanumeric Data	“0” ~ “9”, “A” ~ “Z”, SP, $, %, *, +, -, ., /, :
Kanji Data	Shift JIS value
8bit Byte Data	00H ~ FFH

- The setting impacts the function until the following actions are carried out:
  - Execution of Function 180
  - Execution of ESC @
  - Turning off of printer power

<Function 181> GS (k pL pH cn fn m (fn=81)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	31	51	m
Decimal	29	40	107	3	0	49	81	m

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
cn=49
fn=81
m=48

[Description] Encodes and prints QR CODE symbol data saved in the storage area

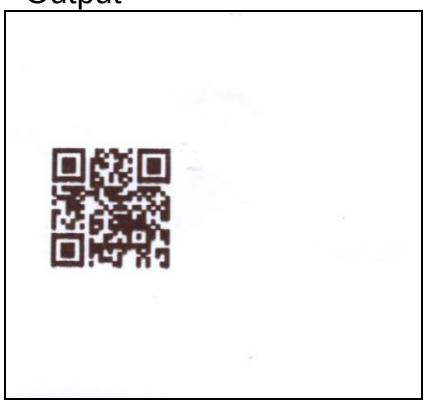
[Notes]

- This function is used in regular mode when the printer is at the first line or no data is present in the printer buffer.
- If the size of any one symbol is larger than the print area, printing cannot be done:
- If any of the following errors is present in the symbol storage area, printing cannot be done.
  - There is no data. (Function 180 cannot be executed)
  - If [(number of columns x number of rows) < number of code words], the numbers of columns and rows are automatically processed.
  - The four types of data compression mode are as follows:
    *Numeric Data Code
    *Alphanumeric Data mode
    *Kanji Data mode
    *8 bit Data mode
    Note: According to the symbol data in the data storage area, automatic conversion to optimal compression is done.
  - The following data is automatically added during encoding:
  - Position sensor pattern
  - Segregator for the position sensor pattern
  - Timing pattern
  - Format information
  - Version information
  - Error correction code text
  - Pad code text
  - Indicator for counting bits of bytes
  - Mode indicator
  - Concluder
  - Queue pattern (when model 2 is selected)
  - Expansion pattern (when model 1 is selected)
- During symbol printing, the printer mode has no effect (bold, underline, reverse direction, contrast).
- In regular mode, this command supplies enough paper required for symbol printing. If the paper supply is not sufficient, the paper supply command is executed. When printing, the printing position is to the left of the print area. After symbol printing, the printer returns to the start position of the line, and the buffer is emptied.

[Example] ▪ Input

0x1d 0x28 0x6b 0x04 0x00 0x31 0x41 0x32 0x00
0x1d 0x28 0x6b 0x03 0x00 0x31 0x43 0x05
0x1d 0x28 0x6b 0x03 0x00 0x31 0x45 0x31
0x1d 0x28 0x6b 0x1b 0x00 0x31 0x50 0x30
0x5a 0x51 0x31 0x31 0x30 0x5f 0x5a 0x65 0x62 0x72
0x61 0x20 0x54 0x65 0x63 0x68 0x6e 0x6f 0x6c 0x6f
0x67 0x69 0x65 0x73
0x1d 0x28 0x6b 0x03 0x00 0x31 0x51 0x30
0x0a

▪ Output



<Function 367> GS (k pL pH cn n (fn=67)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	33	43	n
Decimal	29	40	107	3	0	51	67	n

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
cn=51
fn=67
2<=n<7

[Default]

n=3

[Description]

Sets the DATAMATRIX code size

- It impacts the execution of <Function 381>.
- This function is effective until ESC @ is executed or the printer power is turned off.
- n becomes the value for the module width and height. (The DATAMATRIX module is square-shaped.)

<Function 380> GS (k pL pH cn fn m d1...dk (fn=80)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m	d1...dk
Hex	1D	28	6B	pL	pH	33	50	30	d1...dk
Decimal	29	40	107	pL	pH	51	80	48	d1...dk

[Range]

0 ≤ (pL + pH x 256) ≤ 3116 (0≤ pL ≤255, 0 ≤ pH ≤13)
cn=51
fn=80
m=48
0 ≤ d ≤ 255
k = (pL + pH x 256) – 3

[Description]

Saves DATAMATRIX symbol data to the symbol storage area

[Notes]

- Execution of this command saves data to the data storage area and executes Function 281. Following execution of Function 281, the data remains saved in the symbol storage area.
- k byte represents the symbol data of d1...dk.
- The setting impacts the function until the following actions are carried out:
  - Execution of Function 380
  - Execution of ESC @
  - Turning off of printer power

<Function 381> GS (k pL pH cn fn m (fn=81)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	33	51	m
Decimal	29	40	107	3	0	51	81	m

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
cn=51
fn=81
m=48

[Description] Encodes and prints DATAMATRIX symbol data saved in the storage area

[Notes]

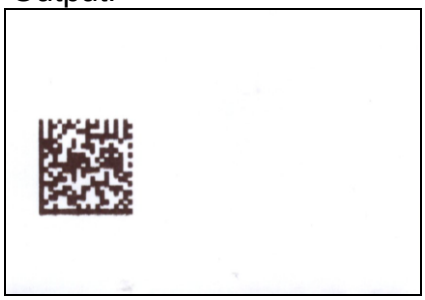
- This function is used in regular mode when the printer is at the first line or no data is present in the printer buffer.
- If the size of any one symbol is larger than the print area, printing cannot be done.
- If any of the following errors is present in the symbol storage area, printing cannot be done:
  - There is no data. (Function 380 cannot be executed)
  - The number of alphanumeric characters exceeds 2334.
  - The number of 8bit byte characters exceeds 1558.
  - The number of numeric characters exceeds 3116.
- DATAMATRIX uses ECC 200 symbols.
- In the detection and correction of errors, DATAMATRIX uses the Reed-Solomon algorithm.
- The following data is automatically added during the encoding process:
  - Position pattern
  - Error correction code text
  - Mode separator
  - Pad code text
- During symbol printing, the printer mode has no effect (bold, underline, reverse direction, contrast).
- In regular mode, this command supplies enough paper required for symbol printing. If the paper supply is not sufficient, the paper supply command is executed. When printing, the printing position is to the left of the print area. After symbol printing, the printer returns to the start position of the line, and the buffer is emptied.

[Example]

- Input:

```
0x1d 0x28 0x6b 0x03 0x00 0x33 0x43 0x05
0x1d 0x28 0x6b 0x1b 0x00 0x33 0x50 0x30
0x5a 0x51 0x31 0x31 0x30 0x5f 0x5a 0x65 0x62 0x72
0x61 0x20 0x54 0x65 0x63 0x68 0x6e 0x6f 0x6c 0x6f
0x67 0x69 0x65 0x73
0x1d 0x28 0x6b 0x03 0x00 0x33 0x51 0x30
0x0a
```

▪ Output:



<Function 465> GS (k pL pH cn fn n (fn=65)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	34	41	n
Decimal	29	40	107	3	0	52	65	n

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
cn=52
fn=65
50<=n<=60

[Default]

n=50

[Description]

Selects the GS1 Databar.

[Notes]

n	Function
50	RSS14 (GS1 DataBar Omnidirectional)
51	RSS14 Truncated (GS1 DataBar Truncated)
52	RSS14 Stacked (GS1 DataBar Stacked)
53	RSS14 Stacked Omnidirectional (GS1 DataBar Stacked Omnidirectional)
56	UPC-A
57	UPC-E
58	EAN-13
59	EAN-8
60	UCC/EAN-128&CC-A/B
61	UCC/EAN-128&CC-C

▪ The setting of this command affects <Function 480> and <Function 481>
▪ The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

<Function 466> GS (k pL pH cn fn n (fn=66)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n1	n2
Hex	1D	28	6B	03	00	34	42	n1	n2
Decimal	29	40	107	3	0	52	66	n1	n2

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
cn=52
fn=66
1<=n1<=8, 1<=n2<=8

[Default]

n1=2
n2=2

[Description]

Set the size of .the GS1 DataBar module height to n1, width to n2 dots.

[Notes]

- The setting of this command affects <Function 480> and <Function 481>
- The setting of this command remains effective until Esc @, printer reset or power cycling is executed.

<Function 468> GS (k pL pH cn fn n (fn=68)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	34	44	n
Decimal	29	40	107	3	0	52	68	n

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
cn=52
fn=68
1<=n<=255

[Default]

n=32

[Description]

Set the module segment height of UCC/EAN-128 barcode type.
This settings will be effective only UCC/EAN-128 barcode type.

[Notes]

- The setting of this command affects <Function 480> and <Function 481>
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

<Function 470> GS (k pL pH cn fn n (fn=70)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	34	46	n
Decimal	29	40	107	3	0	52	70	n

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
cn=52
fn=70
1<=n<=2

[Default]

n=2

[Description]

Specify the height of separator between 2D and 1D barcode symbol.

[Notes]

- The setting of this command affects <Function 480> and <Function 481>
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

<Function 480> GS (k pL pH cn fn m d1…dk (fn=80)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m	d1...dk
Hex	1D	28	6B	pL	pH	34	50	30	d1...dk
Decimal	29	40	107	pL	pH	52	80	48	d1...dk

[Range]

0<=(pL + pH x 256)<=215 (0<=pL<=215, pH=0)
cn=52
fn=80
m=48
0<=d<=255
k = (pL + pH x 256) – 3
Data format : number1...numberN|character1...characterN

Barcode	NumberN	ChracterN
GS1 DataBar Omnidirectional	0 ≤ numberN ≤ 13	0 ≤ chracterN ≤ 164
GS1 DataBar Truncated	0 ≤ numberN ≤ 13	0 ≤ chracterN ≤ 164
GS1 DataBar Stacked	0 ≤ numberN ≤ 13	0 ≤ chracterN ≤ 45
GS1 DataBar Stacked Omnidirectional	0 ≤ numberN ≤ 13	0 ≤ chracterN ≤ 45
UPC-A	0 ≤ numberN ≤ 12	0 ≤ chracterN ≤ 164
UPC-E	0 ≤ numberN ≤ 12	0 ≤ chracterN ≤ 46
EAN-13	0 ≤ numberN ≤ 12	0 ≤ chracterN ≤ 164
EAN-8	0 ≤ numberN ≤ 12	0 ≤ chracterN ≤ 106
UCC/EAN-128&CC-A/B	0 ≤ numberN ≤ 48	0 ≤ chracterN ≤ 164
UCC/EAN-128&CC-C	0 ≤ numberN ≤ 48	0 ≤ chracterN ≤ 164

[Default]

none

[Description]

Store GS1 DataBar symbol data in the symbol storage area.

[Notes]

- The data stored to the symbol storage area by this command is executed by Function 481. The data remains reserved in the symbol storage area.
- Encodes a Global Trade Item Number(GTIN) and AI's(Application Identifiers)
- GS1 DataBar holds a 14-digit number.
- GS1 DataBar can carry GTIN-12, GTIN-13 & GTIN-14
- Numeric character(0-9) – No alpha numeric, no special characters.
  Fiex data length – 14digits(encodes 13 with an implied check digit)
  AI(01) is implied.
  Limeted to GTIN-12, 13 and GTIN-14 with indicator digit 1 only(no other number can be used as an indicator digit)
- The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

<Function 481> GS (k pL pH cn fn m (fn=81)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	34	51	m
Decimal	29	40	107	3	0	52	81	m

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
cn=52
fn=81
m=48

[Default]

none

[Description]

This command encodes and prints GS1 DataBar symbol data saved in the storage area..

[Notes]

- In standard mode, this command is available only when printer is at the beginning of a line or the printer buffer is empty
- A symbol exceeding the printing area in size can not be printed.
- In standard mode, the paper feed amount set by the paper feed setting command does not affect printing of the symbol. The printing position returns to the left side of the printable area after printing the symbol.
- In page mode, the printer stores the symbol data in the print buffer without executing actual printing.

[Example]

- Input:

0x1d 0x28 0x6b 0x03 0x00 0x34 0x41 0x32
0x1d 0x28 0x6b 0x03 0x00 0x34 0x42 0x02 0x02
0x1d 0x28 0x6b 0x03 0x00 0x34 0x43 0x22
0x1d 0x28 0x6b 0x03 0x00 0x34 0x44 0x32
0x1d 0x28 0x6b 0x03 0x00 0x34 0x46 0x02
0x1d 0x28 0x6b 0x25 0x00 0x34 0x50 0x30 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x30 0x31 0x7C 0x74 0x68 0x69 0x73 0x20 0x69 0x73 0x20 0x63 0x6F 0x6D 0x70 0x6F 0x73 0x69 0x74 0x65 0x20 0x69 0x6E 0x66 0x6F
0x1d 0x28 0x6b 0x03 0x00 0x34 0x51 0x30

▪ output:

<Function 565> GS (k pL pH cn fn n (fn=65)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	35	41	n
Decimal	29	40	107	3	0	53	65	n

[Range]
(pL + pH x 256) = 3 (pL=3, pH=0)
cn=53
fn=65
1<=n<=8

[Default]
n=2

[Description]
Set the size of .the Aztec barcode module to n dots.

[Notes]
▪ The setting of this command affects <Function 580> and <Function 581>
▪ The setting of this command remains effective until Esc @, printer reset or power cycling is executed.

<Function 566> GS (k pL pH cn fn n (fn=66)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	35	42	n
Decimal	29	40	107	3	0	53	66	n

[Range]
(pL + pH x 256) = 3 (pL=3, pH=0)
cn=53
fn=66
48≤n≤51

[Default]
n=49

[Description]
Sets the error correction level of the QR code

n	Function	Recovery Amount (%)
48	Error Correction Level 1	10
49	Error Correction Level 2	23
50	Error Correction Level 3	36
51	Error Correction Level 4	50

▪ The setting of this function impacts the execution of <Function 581>.
▪ This function is effective until ESC @ is executed or the printer power is turned off.

<Function 567> GS (k pL pH cn fn n (fn=67)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	n
Hex	1D	28	6B	03	00	35	43	n
Decimal	29	40	107	3	0	53	67	n

[Range]
(pL + pH x 256) = 3 (pL=3, pH=0)
cn=53
fn=67
0<=n<=2

[Default]
n=0

[Description]
Set the mode of .the Aztec barcode module.

[Notes]
- n=0 : data mode, n=1 : gs1 mode, n=2 : unicode mode.
- In gs1 mode, Extended ASCII characters and control characters are not suppored.
- In gs1 mode, data should start with an AI.
- In unicode mode, only latin-1 characters are supported.
- The setting of this command affects <Function 580> and <Function 581>
- The setting of this command remains effective until Esc @, printer reset or power cycling is executed.

<Function 580> GS (k pL pH cn fn m d1…dk (fn=80)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m	d1...dk
Hex	1D	28	6B	pL	pH	35	50	30	d1...dk
Decimal	29	40	107	pL	pH	53	80	48	d1...dk

[Range]
0<=(pL + pH x 256)<=3803 (0<=pL<=256, 0<=pH<=14)
cn=53
fn=80
m=48
0<=d<=255
k = (pL + pH x 256) – 3

[Default]
none

[Description]
Store Aztec barcode symbol data in the symbol storage area.

[Notes]
- The data stored to the symbol storage area by this command is executed by Function 581. The data remains reserved in the symbol storage area.
- Digits only : maximum capacity 3800 digits.
- Alphanumeric text : maximum capacity 300 characters.
- Byte values : maximum capacity 1900 bytes.

<Function 581> GS (k pL pH cn fn m (fn=81)

[Format]

ASCII	GS	(	k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	35	51	m
Decimal	29	40	107	3	0	53	81	m

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
cn=53
fn=81
m=48

[Default]

none

[Description]

This command encodes and prints Aztec barcode symbol data saved in the storage area..

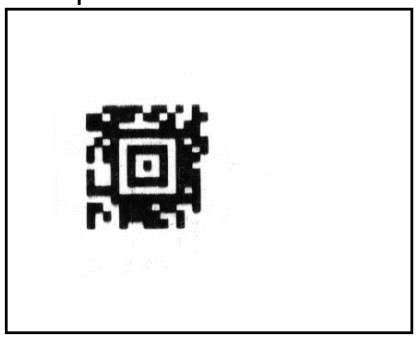
[Notes]

- In standard mode, this command is available only when printer is at the beginning of a line or the printer buffer is empty
- A symbol exceeding the printing area in size can not be printed.
- In standard mode, the paper feed amount set by the paper feed setting command does not affect printing of the symbol. The printing position returns to the left side of the printable area after printing the symbol.
- In page mode, the printer stores the symbol data in the print buffer without executing actual printing.

- Input:

0x1d 0x28 0x6b 0x03 0x00 0x35 0x41 0x03
0x1d 0x28 0x6b 0x03 0x00 0x35 0x42 0x02
0x1d 0x28 0x6b 0x03 0x00 0x35 0x43 0x01
0x1d 0x28 0x6b 0x0b 0x00 0x35 0x50 0x30 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38
0x1d 0x28 0x6b 0x03 0x00 0x35 0x51 0x30

- Output:



GS (E

[Name] Set NV user memory area

[Description] This command stores the customized values to the NV user memory area and uses them for the printer operation. The table below explains the functions available in this command. Execute commands related to the user setting mode by specifying the function code fn.

fn	Format	No.	Function
1	GS (E pL pH fn d1 d2	1	Start the user setting mode
2	GS (E pL pH fn d1 d2 d3	2	End the user setting mode (Performs a soft reset)
3	GS (E pL pH fn [a1 b18...b11]... [ak bk8...bk1]	3	Set value(s) for the memory switch
4	GS (E pL pH fn a	4	Transmit the settings of the memory switch to the host

[Notes]

- pL, pH is used to set the number of bytes following pH to (pL + pH x 256).
- The change in the items of the NV user memory is available only after entering the user setting mode.
- After completing the user setting mode (Function 2), the printer performs a software reset to restore the initial settings in effect at power on. The receive and print buffers are cleared as well.
- Since frequent write operation by this command may deteriorate the performance of the NV memory, it is recommended to write to NV memory only when a significant change in the setting is required.
- While processing this command, the printer remains busy. Therefore the data transmission by the host is not available. The real time commands and ASB operations are not processed.

<Function 1> GS (E pL pH fn d1 d2 (fn=1)

[Format]

ASCII	GS	(	E	pL	pH	fn	d1	d2
Hex	1D	28	45	pL	pH	fn	d1	d2
Decimal	29	40	69	pL	pH	fn	d1	d2

[Range]

(pL + pH x 256) = 3 (pL=3, pH=0)
fn=1
d1=73, d2=78

[Description]

This command starts the user setting mode, enabling the printer to notify that the mode has changed as follows:
[Mode change feedback]

	Hexadecimal	Decimal	Number of Data
Header	37H	55	1 byte
Flag	20H	32	1 byte
NUL	00H	0	1 byte

[Notes]

- This command is effective only in standard mode, not in page mode.
- Upon entering the user mode setting mode by this command, the printer transmits “mode change feedback” to the host.
- The user setting mode should be enabled prior to processing <Function 2> through 12. Otherwise, those functions are ignored.
- After confirming “mode change feedback”, it is recommended to send the command to reconfigure the NV user memory.

<Function 2> GS (E pL pH fn d1 d2 d3 (fn=2)

[Format]

ASCII	GS	(	E	pL	pH	fn	d1	d2	d3
Hex	1D	28	45	pL	pH	fn	d1	d2	d3
Decimal	29	40	69	pL	pH	fn	d1	d2	d3

[Range]

(pL + pH x 256) = 4 (pL=4, pH=0)
fn=2
d1=79, d2=85, d3=84

[Description]

This command terminates the user setting mode and performs a software reset.

[Notes]

- This command activates setting items set in the user setting mode.
- All the setting items will be effective only after performing this command.
- After executing a software reset, the printer resumes the setting in effect at power on.

<Function 3> GS (E pL pH fn [a1 b18...b11]...[ak bk8...bk1] (fn=3)

[Format]

ASCII	GS	(	E	pL	pH	fn	[b18...b11]... [bk8...bk1]
Hex	1D	28	45	pL	pH	fn	[b18...b11]... [bk8...bk1]
Decimal	29	40	69	pL	pH	fn	[b18...b11]... [bk8...bk1]

[Range]

10 ≤ (pL + pH x 256) ≤ 65535
fn=3
a= 1, 2, 5, 6, 7, 8
b=48, 49, 50
1 ≤ k ≤ 10

[Default]

It varies depending on the printer model

▪ This command terminates the user setting mode and performs a software reset.

[Description]

This command changes all the Memory Switch(MSW) 1 through 8 to the value specified by b simultaneously as follows:

- When b=48, 49, the corresponding bit is set to Off and On respectively.
- When b=50, there is no change in the memory switch.

▪ The setting items of the memory switch 1 are as follows:

MSW	Value			Function
	3	2	1	
1-1~3	48	48	48	Print density 130%
	48	48	49	Print density 120%
	48	49	48	Print density 110%
	48	49	49	Print density 150%
	49	48	48	Print density 100%
	49	48	49	Print density 140%
	49	49	48	Print density 90%
	49	49	49	Print density 80%

MSW	Value	Function
1-4	48	2 byte character mode not selected
	49	2 byte character mode selected
1-5	48	Print speed 90mm/s
	49	Print speed 50mm/s
1-6	48	Reserved

- The print density adjusts the darkness of characters to be printed.
- 2-byte character mode is selected to support for Chinese, Japanese, and Korean model.
- The printer supports 2 different printing speeds, 90mm/sec and 50mm/sec.
  Please be sure that the printing quality at higher speed may be worse than at the lower.

▪ The setting items of the memory switch 2 are as follows:
Code page selection using the memory switch 2-3 through 2-8.

MSW2-8	MSW2-7	MSW2-6	MSW2-5	MSW2-4	MSW2-3	Character Table
48	48	48	48	48	48	PC437
48	48	48	48	49	48	Katakana
48	48	48	49	48	48	PC850
48	48	48	49	49	48	PC860
48	48	49	48	48	48	PC863
48	48	49	48	49	48	PC865
48	48	49	49	48	48	WPC1252
48	48	48	48	48	48	PC437
48	48	49	49	49	48	PC866
48	49	48	48	48	48	PC852
48	49	48	48	49	48	PC858
48	49	48	49	48	48	PC862
48	49	48	49	49	48	PC864
48	49	49	48	48	48	Thai42
48	49	49	48	49	48	WPC1253
48	49	49	49	48	48	WPC1254
48	49	49	49	49	48	WPC1257
49	48	48	48	48	48	Farsi
49	48	48	48	49	49	WPC1251
49	48	48	49	48	48	PC737
49	48	48	49	49	49	PC775
49	48	49	48	48	48	Thai 14
49	48	49	48	49	48	Hebrew old code
49	48	49	49	48	48	WPC1255
49	48	49	49	49	48	Thai 11
49	49	48	48	48	48	Thai 18
49	49	48	48	49	48	PC855
49	49	48	49	48	48	PC857
49	49	48	49	49	48	PC928
49	49	49	48	48	48	Thai 16
49	49	49	48	49	48	WPC1256
49	49	49	49	48	48	WPC1258
49	49	49	49	49	48	KHMER
48	48	49	48	48	49	WPC1250
48	48	49	48	49	49	Latin 9

▪ The setting items of the memory switch 5 are as follows:
Specify the length of idle time before the printer enters the power-down mode.
- Range of idle time: 0 min ≤ idle time ≤ 90 min

When memory switch value is 0, the power-down mode is not active

MSW5-8	MSW5-7	MSW5-6	MSW5-5	MSW5-4	MSW5-3	MSW5-2	MSW5-1	Value (min)
48	48	48	48	48	48	48	48	0
48	48	48	48	48	48	48	49	1
48	48	48	48	48	48	49	48	2
48	48	48	48	48	48	49	49	3
48	48	48	48	48	49	48	48	4
.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
48	49	48	49	49	48	49	48	90

▪ The setting items of the memory switch 6 are as follows:
Set the standby time before the printer enters the power saving mode.
- Range of standby time: 10 sec ≤ standby time ≤ 255 sec

When memory switch value is 0, the power saving mode does not work.

MSW6-8	MSW6-7	MSW6-6	MSW6-5	MSW6-4	MSW6-3	MSW6-2	MSW6-1	Value (sec)
48	48	48	48	49	48	49	48	10
48	48	48	48	49	48	49	49	11
48	48	48	48	49	49	48	48	12
48	48	48	48	49	49	48	49	13
48	48	48	48	49	49	49	48	14
.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
49	49	49	49	49	49	49	49	255

▪ The setting items of the memory switch 7 are as follows:
Specify the magnetic card read mode using the memory switch 7-5 through 7-8.

MSW	8	7	6	5	Function
7-5~8	48	48	48	49	Track 1/2/3 read mode command
	48	48	49	48	Track 1 read mode AUTO trigger
	48	48	49	49	Track 2 read mode AUTO trigger
	48	49	48	48	Track 3 read mode AUTO trigger
	48	49	48	49	Track 1/2 read mode AUTO trigger
	48	49	49	48	Track 2/3 read mode AUTO trigger
	48	49	49	49	Track 1/2/3 read mode AUTO trigger
	49	48	48	48	MSR not used

▪ The setting items of the memory switch 8 are as follows:
- Either the character font A or B or C is selected.
- The beep is activated for the audible paper empty warning signal.
- The beep is activated for the audible low battery warning signal.
- The label printing is available by the setting.

MSW	Setting Value	Function
8-1	Refer to the following Table 1	
8-2		
8-3	48	No beeps for roll paper end
	49	Beeps for roll paper end
8-4	48	Beeps for low battery status
	49	No beeps for low battery status
8-5	48	Blackmark mode disable
	49	Blackmark mode enable
8-6	Refer to the following Table2	
8-7		
8-8	48	Reserved

Table 1

Function	MSW 8-2	MSW 8-1
Select font 12x24	48	48
Select font 9x17	48	49
Select font 9x24	49	48

Table 2

Function	MSW 8-8	MSW 8-7	MSW 8-6
Fixed multi byte sentinel characters & encryption MSR data.	49	49	48

- When set to Multi-byte sentinel characters mode, the header and the footer, which have been used in normal mode, are not used any more and the specified Start characters and End characters are added to the beginning parts and the end parts of each track data to be transmitted.
- When set to Multi-byte sentinel characters mode but Start characters and End characters are not set by fn2 and fn3 of BS M S command respectively, the default Start and End characters are applied to MSR data to be transmitted to host.
- When set to Multi-byte sentinel characters mode, <CR/LF> characters after End characters of each track data are automatically applied to the card data to be transmitted to host.

<Function 4> GS (E pL pH fn a (fn=4)

[Format]

ASCII	GS	(	E	pL	pH	fn	a
Hex	1D	28	45	pL	pH	fn	a
Decimal	29	40	69	pL	pH	fn	a

[Range]

(pL + pH x 256) = 2 (pL=2, pH=0)
fn=4
a=1, 2, 5, 6, 7, 8

[Description]

This command transmits the setting value of the memory switch corresponding to a.

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Identifier	21H	33	1 byte
Setting value	30H or 31H	48 or 49	8 bytes
NUL	00H	0	1 byte

▪ The setting value is sent from bit 8 to bit 1, consisting of 8 bytes in total.
- Off: Hexadecimal = 30H / Decimal = 48
- On: Hexadecimal = 31H / Decimal = 49

GS (L, GS 8 L

[Name] Select graphics data

[Format]

ASCII	GS	(	L	pL	pH	m	fn	[parameter]
Hex	1D	28	4C	pL	pH	m	fn	[parameter]
Decimal	29	40	76	pL	pH	m	fn	[parameter]

ASCII	GS	8	L	p1	p2	p3	p4	m	fn	[parameter]
Hex	1D	38	4C	p1	p2	p3	p4	m	fn	[parameter]
Decimal	29	56	76	p1	p2	p3	p4	m	fn	[parameter]

[Description] This command processes graphics data according to the function code(fn).

fn	Format	Function No.	Function
0, 48	GS (L pL pH m fn	Function 48	Transmits the NV graphics memory capacity.
2, 50	GS (L pL pH m fn	Function 50	Prints the graphics data in the print buffer.
3, 51	GS (L pL pH m fn	Function 51	Transmits the remaining capacity of the NV graphics memory.
64	GS (L pL pH m fn d1 d2	Function 64	Transmits the defined NV graphics key code list.
65	GS (L pL pH m fn d1 d2 d3	Function 65	Deletes all NV graphics data.
66	GS (L pL pH m fn kc1 kc2	Function 66	Deletes the specified NV graphics data.
67	GS (L pL pH m fn a kc1 kc2 b xL xH yL yH [c d1...dk]1...[c d1 dk]b	Function 67	Defines the raster graphics data in the non-volatile memory.
69	GS (L pL pH m fn kc1 kc2 x y	Function 69	Prints the specified NV graphics data.
112	GS (L pL pH m fn a bx by c xL xH yL yH d1...dk	Function 112	Stores the raster graphics data in the print buffer memory.

[Notes]

- This command is adapted to print image data.
- pL, pH specifies the number of bytes following pH using (pL + pH x 256).
- Since frequent writing operation could cause the damage to the NV memory, it is recommended to write only when being required.
- While storing data by this command, the printer is in BUSY state where receiving of data is not available. Therefore, it is not recommended to send data during this process.
- The real time commands and ASB operations are not allowed during NV memory operation process.

<Function 48> GS (L pL pH m fn (fn=0, 48)

[Format]

ASCII	GS	(	L	pL	pH	m	fn
Hex	1D	28	4C	pL	pH	m	fn
Decimal	29	40	76	pL	pH	m	fn

[Range]

(pL + pH x 256) = 2 (pL=2, pH=0)
m=48, fn=0, 48

[Description]

Transmits the total capacity of the NV bit-image memory (number of bytes in the memory area).

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	30H	48	1 byte
Data	30H - 39H	48 - 57	1 - 8 bytes
NUL	00H	0	1 byte

▪ The total capacity data is converted to character codes corresponding to decimal data, then transmitted from the MSB.

<Function 50> GS (L pL pH fn (fn=2, 50)

[Format]

ASCII	GS	(	L	pL	pH	m	fn
Hex	1D	28	4C	pL	pH	m	fn
Decimal	29	40	76	pL	pH	m	fn

[Range]

(pL + pH x 256) = 2 (pL=2, pH=0)
m=48, fn=2, 50

[Description]

This command prints the graphics data defined by the process of Function 112.

[Notes]

▪ The graphics data stored in the printer buffer is printed.
▪ This command is available in standard mode, not in page mode.
▪ The graphics data is defined by Function 112.
▪ The required amount of line feed pitch is used for printing graphics data, regardless of the existing setting value of the pitch.

<Function 51> GS (L pL pH m fn (fn=3, 51)

[Format]

ASCII	GS	(	L	pL	pH	m	fn
Hex	1D	28	4C	pL	pH	m	fn
Decimal	29	40	76	pL	pH	m	fn

[Range]

(pL + pH x 256) = 2 (pL=2, pH=0)
m=48, fn=3, 51

[Description]

Transmits the number of bytes of remaining memory (unused area) in the NV user memory.

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	31H	49	1 byte
Data	30H – 39H	48 - 57	1 - 8 bytes
NUL	00H	0	1 byte

▪ The number of bytes of remaining memory is converted to character codes corresponding to decimal data, then transmitted from the MSB.
▪ The data length is variable

<Function 64> GS (L pL pH m fn d1 d2 (fn=64)

[Format]

ASCII	GS	(	L	pL	pH	m	fn	d1	d2
Hex	1D	28	4C	pL	pH	m	fn	d1	d2
Decimal	29	40	76	pL	pH	m	fn	d1	d2

[Range]

(pL + pH x 256) = 4 (pL=4, pH=0)
m=48
fn=64
d1=75, d2=67

[Description]

Transmits the defined NV graphics key code list.

- When the key code is present:

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	72H	114	1 byte
Status	40H or 41H	64 or 65	1 byte
Data	30H - 39H	48 - 57	2 - 80 bytes
NUL	00H	0	1 byte

- When the key code is not present :

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	72H	114	1 byte
Status	40H	64	1 byte
NUL	00H	0	1 byte

▪ If the number of the key code exceeds 40, the key code is transmitted dividing up to 40.
- The status if the continuous transmission data block is present is 41H.
- The status if the continuous transmission data block is not present is 40H.

▪ After the [Header-NULL] is transmitted, the printer receives a response from the host; then it performs the process defined by the response. (See the tables below.)

- When the status (existence of the next data block) is Hexadecimal = 41H / Decimal = 65

Response		Process performed
ASCII	Decimal	
ACK	6	Transmits the next data
NAK	21	Transmits the previous data again
CAN	24	Ends the process

- When the status (for the last data block) is Hexadecimal = 40H / 40H/Decimal = 64

Response		Process performed
ASCII	Decimal	
ACK	6	Ends the process
NAK	21	Transmits the previous data again
CAN	24	Cancels the process

<Function 65> GS (L pL pH m fn d1 d2 d3 (fn=65)

[Format]

ASCII	GS	(	L	pL	pH	m	fn	d1	d2	d3
Hex	1D	28	4C	pL	pH	m	fn	d1	d2	d3
Decimal	29	40	76	pL	pH	m	fn	d1	d2	d3

[Range]

(pL + pH x 256) = 5 (pL=5, pH=0)
m=48
fn=65
d1=67, d2=76, d3=82

[Description]

▪ The graphics data is define by Function 67 into the NV graphics memory with the sector dedicated for storing NV graphics data.

<Function 66> GS (L pL pH m fn kc1 kc2 (fn=66)

[Format]

ASCII	GS	(	L	pL	pH	m	fn	kc1	kc2
Hex	1D	28	4C	pL	pH	m	fn	kc1	kc2
Decimal	29	40	76	pL	pH	m	fn	kc1	kc2

[Range]

(pL + pH x 256) = 4 (pL=4, pH=0)
m=48
fn=66
32 ≤ kc1 ≤ 126
32 ≤ kc2 ≤ 126

[Description]

▪ This command deletes the NV graphics data corresponding to kc1 and kc2.

[Notes]

▪ The graphics data is define by Function 67.
▪ kc1 and kc2 is given to each of the graphics data groups to be stored into the NV graphics memory in the order of download.

<Function 67> GS (L pL pH m fn a kc1 kc2 b xL xH yL yH [c d1...dk]1...[c d1...dk]b (fn=67)

[Format]

ASCII	GS	(	L	pL pH m fn a kc1 kc2 b xL xH yL yH [c d1...dk]1...[c d1...dk]b
Hex	1D	28	4C	pL pH m fn a kc1 kc2 b xL xH yL yH [c d1...dk]1...[c d1...dk]b
Decimal	29	40	76	pL pH m fn a kc1 kc2 b xL xH yL yH [c d1...dk]1...[c d1...dk]b

[Range]

GS (L parameter 3 ≤ (pL + pH x 256) ≤ 65535 (0 ≤ pL ≤ 255, 0 ≤ pH ≤ 255)
[When using GS 8 L: 12 ≤ (p1 + ≤256 + p3 ≤65536 + p4 ≤16777216) ≤253119]
m=48, fn=67, a=48, 32 ≤ kc1 ≤ 126, 32 ≤ kc2 ≤ 126, b=1, 2, 1 ≤ (xL + xH x 256) ≤ 384, 1 ≤ (yL + yH x 256) ≤ 1662 c=49, 0 ≤ d ≤ 255, k = (int ((xL + xH x 256) + 7) / 8) x (yL + yH x 256)

[Description]

- The total capacity of the NV graphic memory is only 256K bytes
- Defines the raster graphics data in the NV graphics area.
  - b specifies the number of the color of the defined data.
  - xL, xH specifies the defined data in the horizontal direction to (xL + xH x 256) dots.
  - xL, xH specifies the defined data in the vertical direction to (yL + yH x 256) dots.
  - c specifies the color of the defined data.

C	Defined data color
49	Color 1

[Notes]

- Color 1 means black

<Function 69> GS (L pL pH m fn kc1 kc2 b x y (fn=69)

[Format]

ASCII	GS	(	L	pL	pH	m	fn	kc1	kc2	x	y
Hex	1D	28	4C	pL	pH	m	fn	kc1	kc2	x	y
Decimal	29	40	76	pL	pH	m	fn	kc1	kc2	x	y

[Range]

(pL + pH x 256) = 6 (pL=6, pH=0)
m=48, fn=69
32 ≤ kc1 ≤ 126
32 ≤ kc2 ≤ 126
x=1, 2
y=1, 2

[Description]

- Prints the NV graphics data defined by the key codes kc1 and kc2. The graphics data is enlarged by x and y in the horizontal and vertical directions.

[Notes]

- This command prints the NV graphics data defined by Function 67.
- In page mode, this command is not effective.
- NV graphics data beyond the print area for one line is not printed.

<Function 112> GS (L pL pH m fn a bx by c xL xH yL yH d1...dk (fn=112)

[Format]

ASCII	GS	(	L	pL pH m fn a bx by c xL xH yL yH d1...dk
Hex	1D	28	4C	pL pH m fn a bx by c xL xH yL yH d1...dk
Decimal	29	40	76	pL pH m fn a bx by c xL xH yL yH d1...dk

[Range]

▪ GS (L parameter
11 ≤ (pL + pH x 256) ≤ 65535 (0 ≤ pL ≤ 255, 0 ≤ pH ≤ 255)
▪ Common parameter for GS (L
m=48, fn=112, a=48
bx=1, 2
by=1, 2
c=49
1 ≤ (xL+xHx256) ≤ 384
1 ≤ (yL + yH x 256) ≤ 1662 (when by = 1)
k = (int ((xL + xH x 256) + 7) / 8) x (yL + yH x 256)

[Description]

▪ This command stores the raster graphics data in the print buffer, enlarged by bx and by in the horizontal and vertical directions.
- xL, xH specifies the raster graphics data in the horizontal direction as (xL + xH x 256) dots.
- yL, yH specifies the raster graphics data in the vertical direction to (yL + yH x 256) dots.
- d denotes the stored data(raster format).
- k denotes the number of the graphics data.
- c specifies the color of the defined data.

C	Defined data color
49	Color 1
50	Color 2

- Color 1 means black, and Color 2 red or blue that is available for 2-color paper.

[Notes]

▪ The graphics data is stored in the printer buffer directly.
▪ Real time command is not effective during processing of this command.

GS :

[Name] Start/end macro definition.

[Format]

ASCII	GS	:
Hex	1D	3A
Decimal	29	58

[Description]

▪ Starts or ends macro definition.
- The contents of the macro can be defined up to 2048 bytes.

GS B

[Name] Turns white/black reverse printing mode on / off.

[Format]

ASCII	GS	B	n
Hex	1D	42	n
Decimal	29	66	n

[Range] 0 ≤ n ≤ 255

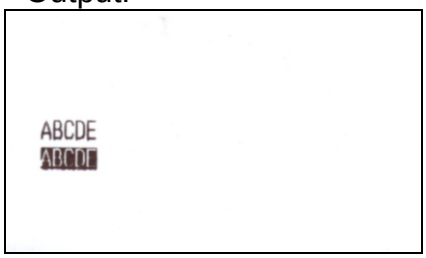
[Default] n=0

[Description]
- Turns white/black reverse printing mode on or off.
  - When the LSB of n is 0, white/black reverse mode is turned off.
  - When the LSB of n is 1, white/black reverse mode is turned on.

[Example]
- Input:

```
0x41 0x42 0x43 0x44 0x45
0x0a
0x1d 0x42 0x01
0x41 0x42 0x43 0x44 0x45
0x0a
```

- Output:



GS H

[Name] Selects the printing position of HRI characters.

[Format]

ASCII	GS	H	n
Hex	1D	48	n
Decimal	29	72	n

[Range] 0 ≤ n ≤ 3, 48 ≤ n ≤ 51

[Default] n=0

[Description]
- Selects the printing position of HRI characters when printing a bar code.
  - n selects the execution of printing and the printing position as follows:

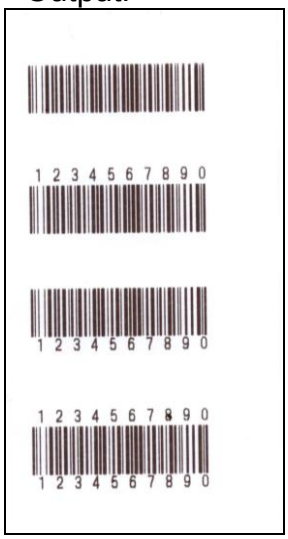
N	Printing position
0, 48	Not printed.
1, 49	Above the bar code.
2, 50	Below the bar code.
3, 51	Both above and below the bar code.

[Example]

▪ Input:

```
0x1d 0x68 0x50
0x1d 0x48 0x00
0x1d 0x6b 0x49 0x0a 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39
0x30
0x1b 0x64 0x03
0x1d 0x48 0x01
0x1d 0x6b 0x49 0x0a 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39
0x30
0x1b 0x64 0x03
0x1d 0x48 0x02
0x1d 0x6b 0x49 0x0a 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39
0x30
0x1b 0x64 0x03
0x1d 0x48 0x03
0x1d 0x6b 0x49 0x0a 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39
0x30
0x0a
```

▪ Output:



GS I

[Name] Transmits printer ID.

[Format]

ASCII	GS	I	n
Hex	1D	49	n
Decimal	29	73	n

[Range] 1 ≤ n ≤ 69,

[Description]

▪ Transmits the printer ID specified.

- Transmits 1 byte of printer ID, using n as follows:

n	Printer ID	ID
1,49	Printer model ID	65
2,50	Type ID	0(2byte character is not supported) or 1(2byte character is supported)
3, 51	Version ID	111

- Transmits specified printer information, using n as follows:

n	Printer ID type	ID
65	Firmware version	Depends on firmware version
66	Manufacturer	Zebra Technologies
67	Printer name	ZQ110
69	Font of Language for each country	Chinese : GB2312 or BIG5 Korean : KS-5601 Japanese : SHIFT-JIS Each default code page

- Printer information (When n = 65, 66, 67, 69) consist of[Header ~ NULL] as Shown in the following table:

Transmitted data	Hex	Decimal	Amount of data
Header	5FH	95	1byte
Printer information	Depends on the model	Depends on the model	1byte
NUL	00H	0	1byte

• This command following DLE can be executed in real-time command mode.

GS I b

[Name] Transmits battery status.

[Format]

ASCII	GS	I	b
Hex	1D	49	62
Decimal	29	73	98

[Description] Transmits the battery power status of the printer

[Notes] The transmitted battery status from this printer is constructed by [Header ~ NUL] as shown in the table below.

Transmitted data	Hex	Decimal	Amount of data
Header	37H	55	1byte
Identifier	45H	69	1byte
Battery remaining	30h-34H	48-52	1byte
NUL	00H	0	1byte

“Battery remaining amount“ is as indicated in the following table:

Battery remaining amount		Information
Hex	Decimal	
30H	48	Battery remaining amount : H level
31H	49	Battery remaining amount : M level
32H	50	Battery remaining amount : L level
33H	51	Battery remaining amount : S level

- ▪ You can confirm the battery remaining amount by looking at the battery LED.
- ▪ When battery remaining amount is S level, the red LED of battery LED is blinking.
- • This command following DLE can be executed in real-time command mode.

GS L

[Name] Set left margin.

[Format]

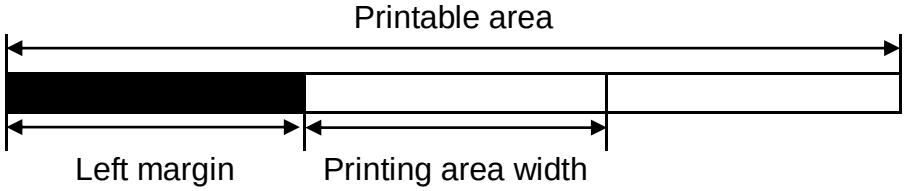
ASCII	GS	L	nL	nH
Hex	1D	4C	nL	nH
Decimal	29	76	nL	nH

[Range] 0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255

[Default] (nL + nH x 256)=0 (nL=0, nH=0)

[Description]

▪ Sets the left margin specified by nL and nH.
- The left margin is [(nL + nH x 256) x (horizontal motion units)].

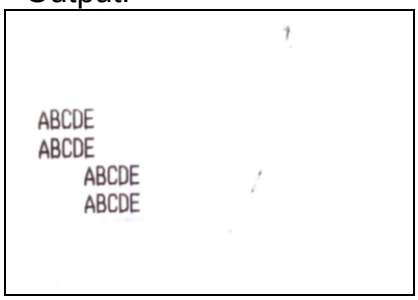


[Example]

▪ Input:

```
0x41 0x42 0x43 0x44 0x45
0x0a
0x41 0x42 0x43 0x44 0x45
0x0a
0x1d 0x4c 0x30 0x00
0x41 0x42 0x43 0x44 0x45
0x0a
0x41 0x42 0x43 0x44 0x45
0x0a
```

▪ Output:



GS T

[Name] Set print position to the beginning of print line.

[Format]

ASCII	GS	T	n
Hex	1D	54	n
Decimal	29	84	n

[Range] n=0, 1, 48, 49

[Description]

▪ This command sets the print position to the beginning of the print line.
- n specifies how data in the print buffer is processed when this command is executed.

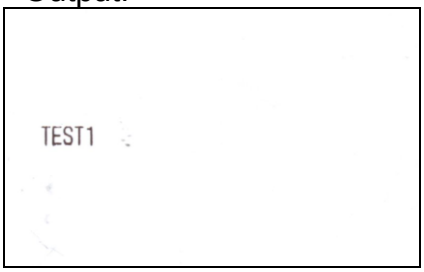
n	Function
0, 48	Sets the print position after the data in the print buffer is deleted.
1, 49	Sets the print position after the data in the print buffer is printed.

[Notes]

▪ This command is effective only in standard mode, and ignored in page mode.
▪ When n =1,49, the printer prints the data in the print buffer and executes a line feed, based on the line feed amount specified.
▪ When n=0,48, the printer removes the print data in the print buffer.
▪ After processing this command, the print position moves to the left of the print area. The printer buffer will be empty.
▪ This command is ignored if the print position is already the begaining of the line.

[Example]

▪ Input:
0x54 0x45 0x53 0x54 0x30
0x1d 0x54 0x00
0x54 0x45 0x53 0x54 0x31
0x1d 0x54 0x01
▪ Output:



GS W

[Name] Set printing area width.

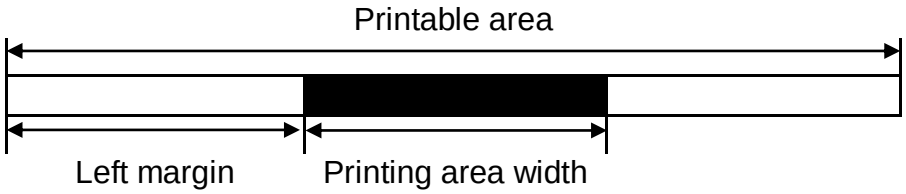
[Format]

ASCII	GS	W	nL	nH
Hex	1D	57	nL	nH
Decimal	29	87	nL	nH

[Range] 0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255

[Default] (nL + nH x 256)=384 (nL=128, nH=1) (for 58mm of the paper width)

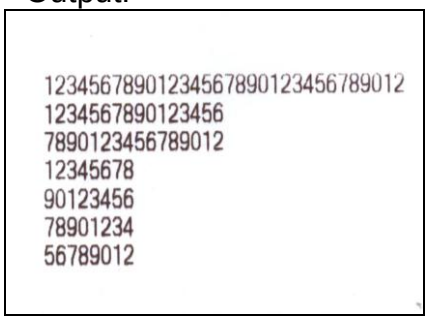
[Description]
- Sets the printing area width specified with nL and nH.
  - The printing area width is [(nL + nH x 256) x (horizontal motion units)].



[Example]
- Input:

0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x30 0x31 0x32 0x33
0x34 0x35 0x36 0x37 0x38 0x39 0x30 0x31 0x32 0x33 0x34 0x35 0x36
0x37 0x38 0x39 0x30 0x31 0x32
0x0a
0x1d 0x57 0xc0 0x00
0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x30 0x31 0x32 0x33
0x34 0x35 0x36 0x37 0x38 0x39 0x30 0x31 0x32 0x33 0x34 0x35 0x36
0x37 0x38 0x39 0x30 0x31 0x32
0x0a
0x1d 0x57 0x60 0x00
0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x30 0x31 0x32 0x33
0x34 0x35 0x36 0x37 0x38 0x39 0x30 0x31 0x32 0x33 0x34 0x35 0x36
0x37 0x38 0x39 0x30 0x31 0x32
0x0a

- Output:



GS \

[Name] Set relative vertical print position in page mode.

[Format]

ASCII	GS	\	nL	nH
Hex	1D	5C	nL	nH
Decimal	29	92	nL	nH

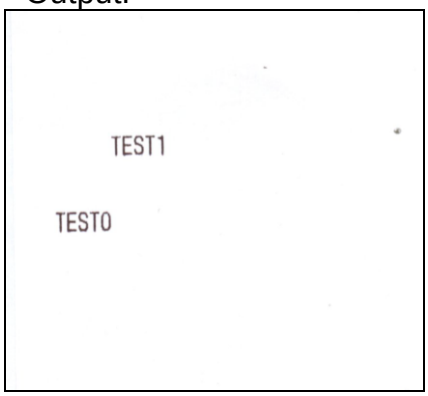
[Range] 0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255

[Description] ▪ Sets the relative vertical print starting position from the current position in page mode. The distance from the current position to the starting position is [(nL + nH x 256) x (vertical or horizontal motion units)].

[Example] ▪ Input:

```
0x1b 0x4c
0x1b 0x57 0x00 0x00 0x00 0x00 0x80 0x01 0x80 0x01
0x1d 0x24 0x50 0x00
0x1d 0x5c 0xc0 0x00
0x54 0x45 0x53 0x54 0x30
0x1d 0x24 0xc0 0x00
0x54 0x45 0x53 0x54 0x31
0x0c
```

▪ Output:



GS ^

[Name] Execute macro.

[Format]

ASCII	GS	^	r	t	m
Hex	1D	5E	r	t	m
Decimal	29	94	r	t	m

[Range]
0 ≤ r ≤ 255
0 ≤ t ≤ 255
m=0, 1

[Description]
▪ Executes a macro.
- r specifies the number of times to execute the macro.
- t specifies the waiting time for executing the macro.
- m specifies macro executing mode from the table below.

m	Function
0	Executes the macro r times at the interval specified by t.
1	After waiting for the time specified by t, the FEED button must be pressed. After the button is pressed, the macro is executed once. This operation is then repeated r times.

GS a

[Function] Enable/Disable Automatic Status Back. (ASB)

[Code]

ASCII	GS	a	n
Hex	1D	61	n
Decimal	29	97	n

[Range] 0 ≤ n ≤ 255

[Default] n=0

[Description] This enables or disables ASB (Automatic Status Back) according to n.
- ASB is enabled when n > 0.

[Remarks]
▪ ASB is the function that transmit the printer status such as cover open/close and Online/Offline if ASB is enabled. Using this ASB function, the host can check to see if the printer is running properly.
▪ Once ASB has been enabled, the printer transmit the current printer status When its status is changed, until ASB is disabled.
▪ When n = 0, ASB is disabled. The printer stops transmitting the status.
▪ The setting of this command remains effective until ESC @, printer reset or power cycling is executed.

▪ The printer information transmitted is comprised of 4 bytes as follows:

- First byte(printer information)

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off
1	Off	00	0	Not used. Fixed to Off
2	On	04	4	Not used. Fixed to On
3	Off	00	0	On-line
	On	08	8	Off-line
4	On	10	16	Not used. Fixed to On
5	Off	00	0	Cover is close
	On	20	32	Cover is open
6	Off	00	0	Paper is not being fed by the paper feed button
	On	40	64	Paper is being fed by the paper feed button
7	Off	00	0	Not used. Fixed to Off

- Second byte(printer information)

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Not used. Fixed to Off
1	Off	00	0	Not used. Fixed to Off
2	Off	00	0	Not used. Fixed to Off
3	Off	00	0	Not used. Fixed to Off
4	Off	00	0	Not used. Fixed to Off
5	Off	00	0	Not used. Fixed to Off
6	Off	00	0	Not used. Fixed to Off
7	Off	00	0	Not used. Fixed to Off

- Third byte (paper sensor information)

Bit	Off/On	Hex	Decimal	Function
0,1	Off	00	0	Not used. Fixed to Off
2,3	Off	00	0	Paper sensor: paper present
	On	0C	12	Paper sensor: no paper present
4	Off	00	0	Not used. Fixed to Off
5	Off	00	0	Not used. Fixed to Off
6	Off	00	0	Not used. Fixed to Off
7	Off	00	0	Not used. Fixed to Off

- Fourth byte (paper sensor information)

Bit	Off/On	Hex	Decimal	Function
0	On	01	1	Not used. Fixed to On
1	On	02	2	Not used. Fixed to On
2	On	04	4	Not used. Fixed to On
3	On	08	8	Not used. Fixed to On
4	Off	00	0	Not used. Fixed to Off
5	Off	00	0	Not used. Fixed to Off
6	Off	00	0	Not used. Fixed to Off
7	Off	00	0	Not used. Fixed to Off

GS f

[Name] Select font for HRI characters.

[Format]

ASCII	GS	f	n
Hex	1D	66	n
Decimal	29	102	n

[Range] n=0, 1, 48, 49

[Default] n=0

[Description]

▪ Selects a font for the HRI characters used when printing a bar code.
- n specifies the font of the HRI characters as follows:

n	Font
0, 48	Font A (12 x 24)
1, 49	Font B (9 x 24)

[Example]

▪ Input:

```
0x1d 0x68 0x50
0x1d 0x48 0x02
0x1d 0x66 0x01
0x1d 0x6b 0x49 0x0a 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39
  0x30
0x0a
0x1d 0x66 0x00
0x1d 0x6b 0x49 0x0a 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39
  0x30
0x0a
```

▪ Output:

GS h

[Name] Selects bar code height.

[Format]

ASCII	GS	h	n
Hex	1D	68	n
Decimal	29	104	n

[Range] 1 ≤ nL ≤ 255

[Default] n=162

[Description] ▪ Selects the height of the bar code as n dots.

[Example] ▪ Input:

```
0x1d 0x68 0x40
0x1d 0x6b 0x49 0x0a 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39
  0x30
0x0a
0x1d 0x68 0x80
0x1d 0x6b 0x49 0x0a 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39
  0x30
0x0a
0x1d 0x68 0xc0
0x1d 0x6b 0x49 0x0a 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39
  0x30
0x0a
```

▪ Output:

GS k

[Name] Print bar code.

[Format]

①	ASCII	GS	k	m	d1...dk	NUL
	Hex	1D	6B	m	d1...dk	NUL
	Decimal	29	107	m	d1...dk	NUL

②	ASCII	GS	k	m	n	d1...dn
	Hex	1D	6B	m	n	d1...dn
	Decimal	29	107	m	n	d1...dn

[Range] ① 0 ≤ m ≤ 6 (k and d depend on the bar code system used)
② 65 ≤ m ≤ 73 (n and d depend on the bar code system used)

[Description] ▪ Selects a bar code system and prints the bar code.

For ①

m	Bar Code System	Range of k	Range of d
0	UPC-A	11 ≤ k ≤ 12	48 ≤ d ≤ 57
1	UPC-E	11 ≤ k ≤ 12	48 ≤ d ≤ 57
2	JAN13(EAN)	12 ≤ k ≤ 13	48 ≤ d ≤ 57
3	JAN8(EAN)	7 ≤ k ≤ 8	48 ≤ d ≤ 57
4	CODE39	1 ≤ k	48 ≤ d ≤ 57, 65 ≤ d ≤ 90, d=32,36,37,43,45,46,47
5	ITF	1 ≤ k (even number)	48 ≤ d ≤ 57
6	CODABAR	1 ≤ k	48 ≤ d ≤ 57, 65 ≤ d ≤ 68, d=36,43,45,46,47,58

For ②

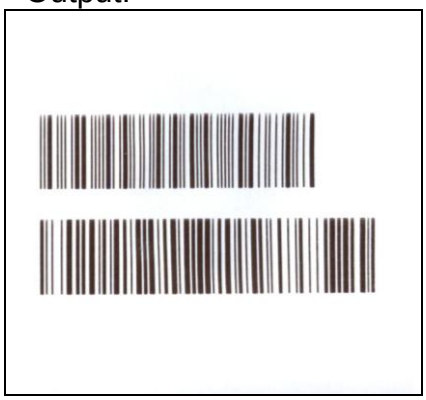
m	Bar Code System	Range of k	Range of d
65	UPC-A	11 ≤ n ≤ 12	48 ≤ d ≤ 57
66	UPC-E	11 ≤ n ≤ 12	48 ≤ d ≤ 57
67	JAN13(EAN)	12 ≤ n ≤ 13	48 ≤ d ≤ 57
68	JAN8(EAN)	7 ≤ n ≤ 8	48 ≤ d ≤ 57
69	CODE39	1 ≤ n ≤ 255	48 ≤ d ≤ 57, 65 ≤ d ≤ 90, d=32,36,37,43,45,46,47
70	ITF	1 ≤ n ≤ 255 (even number)	48 ≤ d ≤ 57
71	CODABAR	1 ≤ n ≤ 255	48 ≤ d ≤ 57, 65 ≤ d ≤ 68, d=36,43,45,46,47,58
72	CODE93	1 ≤ n ≤ 255	0 ≤ d ≤ 127
73	CODE128	2 ≤ n ≤ 255	0 ≤ d ≤ 127

[Notes] ▪ The user must consider the quiet zone of the bar code (left and right spaces of the bar code)

[Example] ▪ Input:

0x1d 0x68 0x50
0x1d 0x77 0x02
0x1d 0x6b 0x06 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x30 0x41 0x42 0x43 0x00
0x0a
0x1d 0x6b 0x49 0x0d 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x30 0x41 0x42 0x43
0x0a

▪ Output:



GS r

[Name] Transmit status.

[Format]

ASCII	GS	r	n
Hex	1D	72	n
Decimal	29	114	n

[Range] n=1, 2, 49, 50

[Description] ▪ Transmits the normal status specified by n as follows:

n	Function
1, 49	Transmits paper sensor status.

▪ Paper sensor status (n=1, 49) :

Bit	Off/On	Hex	Decimal	Function
0, 1	Off	00	0	Reserved.
	On	03	3	Reserved.
2, 3	Off	00	0	Paper roll end sensor; paper present.
	On	0C	12	Paper roll end sensor; paper not present.
4	Off	00	0	Fixed.
5	Off	00	0	Reserved.
6	Off	00	0	Reserved.
7	Off	00	0	Fixed.

- Bits 2 and 3: This command can not be executed when the printer is offline due to the lack of paper. Therefore, the status of bit 2 (1) and bit 3 (1) is not transmitted.

• This command following DLE can be executed in real-time command mode.

GS v 0

[Name] Print raster bit image.

[Format]

ASCII	GS	v	0	m	xL	xH	yL	yH	d1...dk
Hex	1D	76	30	m	xL	xH	yL	yH	d1...dk
Decimal	29	118	48	m	xL	xH	yL	yH	d1...dk

[Range]

0 ≤ m ≤ 3, 48 ≤ m ≤ 51
1 ≤ (xL + xH x 256) ≤ 128 (0 ≤ xL ≤ 128, xh=0)
1 ≤ (yL + yH x 256) ≤ 4095 (0 ≤ yL ≤ 255, 0 ≤ yH ≤ 15)
0 ≤ d ≤ 255
k = (xL + xH x 256) x (yL + yH x 256)

[Description]

▪ Prints a raster bit image in m mode.
- m specifies the bit image mode.

m	Mode	Vertical dot density	Horizontal dot density
0, 48	Normal	203 dpi	203 dpi
1, 49	Double-width	203 dpi	203/2 dpi
2, 50	Double-height	203/2 dpi	203 dpi
3, 51	Quadruple	203/2 dpi	203/2 dpi

dpi : dots per 25.4mm {1"}

- xL, xH specifies (xL + xH x 256) byte(s) in the horizontal direction for the bit image.
- yL, yH specifies (yL + yH x 256) dot(s) in the vertical direction for the bit image.
- d specifies the definition data of the bit image data.

GS w

[Name] Set bar code width.

[Format]

ASCII	GS	w	n
Hex	1D	77	n
Decimal	29	119	n

[Range]

2 ≤ n ≤ 6 , n=3

[Description]

▪ Set the horizontal size of the bar code, using n as follows:

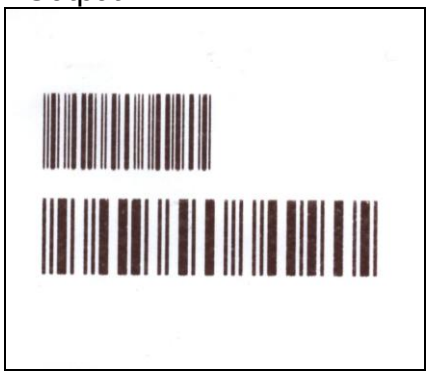
n	Multi-level Bar Code Module Width (mm)	Binary-level Bar Code	
		Thin element width (mm)	Thick element width (mm)
2	0.250	0.250	0.625
3	0.375	0.375	1.000
4	0.500	0.500	1.250
5	0.625	0.625	1.625
6	0.750	0.750	2.000

[Notes]

▪ Multi-level bar codes are as follows:
- UPC-A, UPC-E, JAN13, JAN8, CODE93, CODE128

▪ Binary-level bar codes are as follows:
- CODE39, ITF, CODABAR

[Example] ▪ Input:
0x1d 0x68 0x50
0x1d 0x77 0x02
0x1d 0x6b 0x46 0x0a 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x30
0x0a
0x1d 0x77 0x04
0x1d 0x6b 0x46 0x0a 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x39 0x30
0x0a
▪ Output:



BS L A

[Name] Execute auto calibration in label mode.

[Format]

ASCII	BS	L	A
Hex	08	4C	41
Decimal	8	76	65

[Description] ▪ Execute auto calibration in label mode.

[Notes] ▪ Store the value for the liner into NV memory during three-label feed process without printing.
▪ The leading edge of the label is positioned at the print line by the use of the stored value.

BS L L

[Name] Change label mode.

[Format]

ASCII	BS	L	L
Hex	08	4C	4C
Decimal	8	76	76

[Description] ▪ Change from receipt mode to Label mode.

[Notes] ▪ The memory switch setting is changed.

BS L R

[Name] Change receipt mode.

[Format]

ASCII	BS	L	R
Hex	08	4C	52
Decimal	8	76	82

[Description]
- Change from label mode to receipt mode.

[Notes]
- The memory switch setting is changed.

BS M

[Name] Select device font type

[Format]

ASCII	BS	M	n	m
Hex	08	4D	n	m
Decimal	8	77	n	m

[Range] 65 ≤ m ≤ 67 (m = 65,66,67)
n = 0

[Default] n = 0

[Description]
- Font type select by m value as follows:

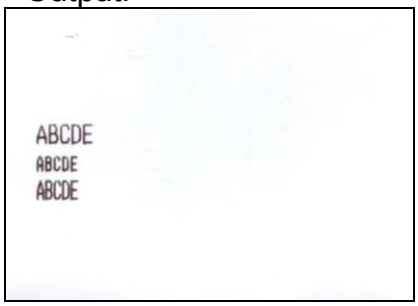
m	Function (Select font type)
65	Font A (12x24)
66	Font B (9x17)
67	Font C (9x24)

[Notes]
- The setting of this command remains effective until ESC !, ESC M ESC @, printer reset or power cycling is executed.

[Example]
- Input:

```
0x08 0x4d 0x41
0x41 0x42 0x43 0x44 0x45
0x0a
0x08 0x4d 0x42
0x41 0x42 0x43 0x44 0x45
0x0a
0x08 0x4d 0x43
0x41 0x42 0x43 0x44 0x45
0x0a
```

- Output:



BS M S PL PH fn2 m d1~dk

[Name] Set Start characters

[Format]

ASCII	BS	M	S	pL	pH	fn2	m	d1~dk
Hex	08	4D	53	pL	pH	32	m	d1~dk
Decimal	08	77	83	pL	pH	50	m	d1~dk

[Range] 3 ≤ (pL+pHx256) ≤ 12
m = 49, 50, 51 32 ≤d ≤127, k ≤ 10

[Default] Track 1 : “START1 “
Track 2 : “START2 “
Track 3 : “START3 “

[Description]
- m defines the track to set Start characters.
- d indicates the characters to be set as Start characters.
- k indicates the number of characters to be used as Start characters.
- k is defined as (PL + PH x 256) - 2
- If Dynamic sentinel character mode is set by fn1 after setting Start characters, the Start characters are added to the beginning parts of each track data after reading card data and then the card data is transmitted.
- The specified Start characters are saved to non-volatile memory so the setting value is not changed even though the printer is reset.

BS M S PL PH fn3 m d1~dk

[Name] Set End characters

[Format]

ASCII	BS	M	S	pL	pH	fn3	m	d1~dk
Hex	08	4D	53	pL	pH	33	m	d1~dk
Decimal	08	77	83	pL	pH	51	m	d1~dk

[Range] 3 ≤ (pL+pHx256) ≤ 12
m = 49, 50, 51 32 ≤d ≤127, k ≤ 10

[Default] Track 1 : “END1”
Track 2 : “END2”
Track 3 : “END3”

[Description]
- m defines the track to set an End character.
- d indicates the character to be set as an End character.
- k indicates the number of characters to be used as End characters.
- k is defined as (PL + PH x 256) - 2
- If Dynamic sentinel character mode is set by fn1 after setting End characters, the End characters are added to the end parts of each track data after reading card data and then the data is transmitted.
- If d is set to Null 1-byte, it allows the setting of no End character.
- The specified End characters are saved to non-volatile memory so the setting value is not changed even though the printer is reset.

Dynamic sentinel character mode

START characters (Max 10 byte)	Max DATA 76 characters (1Track data)	END characters (Max 10 byte)	0DH 0AH
START characters (Max 10 byte)	Max DATA 37 characters (2Track data)	END characters (Max 10 byte)	0DH 0AH
START characters (Max 10 byte)	Max DATA 104 characters (3Track data)	END characters (Max 10 byte)	0DH 0AH

BS M S PL PH fn4 m

[Name] Transmit Start and End characters setting information

[Format]

ASCII	BS	M	S	pL	pH	fn4	m
Hex	08	4D	53	pL	pH	34	m
Decimal	08	77	83	pL	pH	52	m

[Range]

(pL+pHx256) = 2
m = 49, 50, 51

[Description]

▪ m defines the track to be transmitted.

▪ The transmission format is as follows:

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	81H	129	1 byte
Track	31H~33H	49~51	1byte
Start characters	20H ~ 7FH	32~127	Max 10 bytes
Separate	1F	31	1byte
End characters	20H~7FH	32~127	Max 10 bytes
NUL	00H	0	1 byte

- The track on the above table indicates the track information of transmission data.
- For example, the track value of 31H indicates the information on the Start and End characters of Track 1.
- If d is set to Null 1-byte in fn3, End characters are not transmitted.

US US i

[Name] Get B/T configuration

[Format]

ASCII	US	US	i	n
Hex	1F	1F	69	n
Decimal	31	31	105	n

[Range] n = 99, 115, 100, 107

[Description] B/T configuration details select by n value as follows:

n	Function (Select information)
99	Connection mode
115	Encryption mode
100	Device name
107	PIN code

▪ The Response format from printer is as follows:

	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Flag	42H	129	1 byte
Items	63H, 73H, 64H, 6BH	99, 115, 100, 107	1 byte
Data	-	-	-
NUL	00H	0	1 byte

US US p

[Name] Set B/T configuration

[Format]

ASCII	US	US	p	n	m	p1~pk	CR	d1~dk	CR
Hex	1F	1F	70	n	m	p1~pk	0D	d1~dk	0D
Decimal	31	31	112	n	m	p1~pk	13	d1~dk	13

[Range]

n = 48, 49
m = 48, 49, 50
p, d = Alphanumeric

[Description] ▪ B/T configuration details

n	Encryption mode
48	Disable
49	Enable

m	Connection mode
49	Mode 1
50	Mode 2
51	Mode 3

▪ p indicates the character to be set as an PIN code.
- length: 1 < p < 16 (Byte)
▪ d indicates the character to be set as an B/T device name.
- length: 1 < d < 30 (Byte)
▪ k indicates the number of characters to be used as PIN code.(or device name)

WLAN configuration

[Name] WLAN configuration command

[Description] 'Start Message' is necessary before sending command via USB interface.

Start Message	Value	Direction
Message	7FH, 1DH, 1FH, 03H	Host → Printer
Response	7FH, 03H	Printer → Host

▪ When sending the Configuration command to the printer via USB interface, all Bytes should be converted to 2 Bytes data.
- For example, When sending "_1A" command,

Character	Hexadecimal	Divide	2 Byte data
'_'	0x5F	5, F	35H, 46H
'1'	0x31	3, 1	33H, 31H
'A'	0x41	4, 1	34H, 31H

▪ [0x03] 1Byte should be added to last command

* When using WLAN for configuration, 'Start Message' and 2Bytes data converted from 1byte are not necessary.

▪ Reference for requesting WALN configuration

Operation	Message Value	Size	Remark
Connect Request (Host → Printer)	System Request CMD("__[I_F]__[SYS_REQ]")	unsigned char[18]	
	Check sum	unsigned char[2]	
Connect Request (Printer → Host)	Search Request CMD("__[I_F]__[SYS_RSP]")	unsigned char[18]	
	Firmware version	unsigned char[16]	
	Update date	unsigned char[32]	
	MAC Address	unsigned char[6]	
	Check sum	unsigned char[2]	
Configuration Get Value (Host → Printer)	Configuration Get Value CMD("__[I_F]__[IF__GET]")	unsigned char[18]	Header
	Check sum	unsigned char[2]	
Configuration Current Value (Printer → Host)	Configuration Current Value CMD("__[I_F]__[IF__CUR]")	unsigned char[18]	
	SystemName	unsigned char[64]	
	Region	unsigned char	
	NetworkMode	unsigned char	Infratructure(0) Adhoc(1)
	IpConfigMode	unsigned char	DHCP(0) Manual(1)
	IP Address	unsigned char[4]	
	SubNetMask	unsigned char[4]	
	Gateway	unsigned char[4]	
	SSID	unsigned char[32]	ESSID
	AUTH Mode	unsigned char	0:Open 1:Shared 2:WPA1PSK 3:WPA2PSK 4:WPA1EAP 5:WPA2EAP
	Crypto Mode	unsigned char	0:none 1:WEP64/128 2:TKIP 3:AES
	WEP Key_0	unsigned char[26]	
	WEP Key_1	unsigned char[26]	

	WEP Key_2	unsigned char[26]	
	WEP Key_3	unsigned char[26]	
	PSK Key	unsigned char[64]	
	Adhocchannel	unsigned char	
	EAP Mode	unsigned char	0:PEAP 1:TTLS 2:TLS 3:LEAP 4:FAST
	EAP ID	unsigned char[32]	
	EAP PASSWORD	unsigned char[32]	
	Dummy	unsigned char	
	P2P_Pin_code	unsigned char[9]	Max 8bytes
	P2P_Channel	unsigned char[3]	1,6,11
	USER NAME	unsigned char[32]	System ID
	USER PASSWORD	unsigned char[32]	System Password
	PRINTER Port	unsigned char[2]	
	Dummy	unsigned char	Channel Search
	SysContact	unsigned char[64]	
	SysLocation	unsigned char[64]	
	ipDefaultTTL	unsigned char	
	Dummy	unsigned char	
	isWebSSL	unsigned char	Enable/Disable
	isTelnet	unsigned char	Enable/Disable
	isFTP	unsigned char	Enable/Disable
	isSNMP	unsigned char	Enable/Disable
	isSNMPTrap	unsigned char	
	SNMPSetCommunity	unsigned char[16]	
	SNMPGetCommunity	unsigned char[16]	
	SNMPTrapCommunity	unsigned char[16]	
	TrapIP	unsigned char[4]	
	IncativityTime	unsigned char[2]	
	Check sum	unsigned char[2]	
Message FAIL (Host ↔ Printer)	FAIL CMD("__[I_F]__[___FAIL]")	unsigned char[18]	Fail response
	Check sum	unsigned char[2]	

▪ Reference for setting WLAN configuration,

Operation	Message Value	Size	Remark
Configuration Set Value (Host → Printer)	Configuration Set Value CMD("__[I_F]__[IF__SET]")	unsigned char[18]	
	SystemName	unsigned char[64]	
	Region	unsigned char	
	NetworkMode	unsigned char	Infratructure(0) Adhoc(1)
	IpConfigMode	unsigned char	DHCP(0) Manual(1)
	IP Address	unsigned char[4]	
	SubNetMask	unsigned char[4]	
	Gateway	unsigned char[4]	
	SSID	unsigned char[32]	
	AUTH Mode	unsigned char	0:Open 1:Shared 2:WPA1PSK 3:WPA2PSK 4:WPA1EAP 5:WPA2EAP
	Crypto Mode	unsigned char	0:none 1:WEP64/128 2:TKIP 3:AES
	WEP Key	unsigned char[26]	
	Dummy	unsigned char[26]	
	Dummy	unsigned char[26]	
	Dummy	unsigned char[26]	
	PSK Key	unsigned char[64]	
	Adhocchannel	unsigned char	
	EAP Mode	unsigned char	0:PEAP 1:TTLS 2:TLS 3:LEAP 4:FAST
	EAP ID	unsigned char[32]	
	EAP PASSWORD	unsigned char[32]	
	Dummy	unsigned char	

	P2P_Pin_code	unsigned char[9]	Max 8bytes
	P2P_Channel	unsigned char[3]	1,6,11
	USER NAME	unsigned char[32]	System ID
	USER PASSWORD	unsigned char[32]	System Password
	PRINTER Port	unsigned char[2]	
	Dummy	unsigned char	Channel Search
	SysContact	unsigned char[64]	
	SysLocation	unsigned char[64]	
	ipDefaultTTL	unsigned char	
	Dummy	unsigned char	
	isWebSSL	unsigned char	
	isTelnet	unsigned char	
	isFTP	unsigned char	
	isSNMP	unsigned char	
	isSNMPTrap	unsigned char	
	SNMPSetCommunity	unsigned char[16]	
	SNMPGetCommunity	unsigned char[16]	
	SNMPTrapCommunity	unsigned char[16]	
	TrapIP	unsigned char[4]	
	IncativityTime	unsigned char[2]	
	Check sum	unsigned char[2]	
Message SUCCESS (Printer → Host)	SUCCESS CMD("__[I_F]__[IF__SUC]")	unsigned char[18]	Success response
	Check sum	unsigned char[2]	
Message FAIL (Host ↔ Printer)	FAIL CMD("__[I_F]__[___FAIL]")	unsigned char[18]	Fail response
	Check sum	unsigned char[2]	